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'Discriminated against, stigmatised, afraid and on their own': a qualitative investigation of the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria

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Running head: Frontline physiotherapists

Abstract

Objectives

Evidence-based guidelines recommend physiotherapy in the respiratory treatment and physical rehabilitation of patients with COVID-19. It is unclear to what extent physiotherapy services are utilised in the frontline management of COVID-19 in Nigeria. Therefore, this study aimed to explore the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria.

Design

Exploratory qualitative study of all consenting physiotherapists managing COVID-19 patients in the frontline in Nigeria. Qualitative in-depth semi-structured telephone interviews were conducted and transcribed verbatim. The transcripts were thematically analysed.

Setting

ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in Nigeria.

Participants

All consenting physiotherapists managing COVID-19 patients in the frontline in Nigeria.

Results

Eight frontline physiotherapists (three neurophysiotherapists, two orthopaedic physiotherapists, one cardiopulmonary physiotherapist, one sports physiotherapist and one rotational physiotherapist) provided consent and data for this study. Four themes and thirteen subthemes were generated illustrating discriminatory experiences of frontline physiotherapists, particularly from COVID-19 team leads; lack of multidisciplinary teamwork within COVID-19 teams; wide ranging stigmatisation from extended family members, colleagues, friends, and the general public; material and psychosocial personal losses; lack of system support; and suboptimal utilisation of physiotherapy in the management of COVID-19 in Nigeria. Personal agency, sense of professionalism, previous experience managing highly infectious diseases, and being a cardiopulmonary physiotherapist were the factors that facilitated the frontline physiotherapists into being involved in managing COVID-19 patients. However, discriminatory experiences drove some of these physiotherapists out of remaining involved in managing COVID-19 patients in the frontline. Most of the frontline physiotherapists were not

cardiopulmonary physiotherapists which may have influenced their level of expertise, multidisciplinary involvement, and patient outcomes.

Conclusions
Currently, there is suboptimal involvement and support for physiotherapists, particularly cardiopulmonary physiotherapists treating COVID-19 patients in the frontline in Nigeria.

Keywords
Physiotherapists, Physical Therapists, COVID-19, Qualitative research, Nigeria, Africa

Strengths and limitations of this study

- This is the first qualitative study of physiotherapists involved in managing COVID-19 patients in the frontline in any Africa country.
- This study involved individual telephone interviews of all consenting physiotherapists managing COVID-19 patients in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in Nigeria.
- Interviews were audio-recorded, transcribed verbatim, and analysed using thematic analysis.
- A Public Involvement and Engagement consultation group informed the interpretation of the results of this study.

Introduction

Physiotherapy is recommended in the respiratory treatment and physical rehabilitation of patients with COVID-19 [1]. Physiotherapy may be indicated in the cases of COVID-19 patients who present with productive cough and are unable to clear secretions independently. High-risk patients are those with existing comorbidities associated with hypersecretion or ineffective cough (e.g., neuromuscular disease, respiratory disease, and cystic fibrosis), and they require physiotherapy. Physiotherapy is indicated for ventilated patients who show signs of inadequate airway clearance requiring airway

clearance techniques. Patients with severe respiratory failure associated with COVID-19 may require prone position to optimise oxygenation, and this should be overseen by the physiotherapist. Patients with ICU-acquired weakness due to prolonged protective lung ventilation, sedation and use of neuromuscular blocking agents require initiation of early rehabilitation by the physiotherapist after the acute phase of respiratory distress [1,2].

Limited qualitative studies have explored the experiences of frontline physiotherapists managing COVID-19 patients globally. Most qualitative studies have explored the experiences of physicians and nurses in China and Europe [3–6]. More recent qualitative studies have included physiotherapists among other health professionals in the United Kingdom [7] or involved only physiotherapists in Spain [8]. Traumatising and shocking experiences, limited material resources, feelings of a sense of duty despite significant personal risks, challenges managing a novel condition, resilience despite working challenges, and the need for support were common findings across these studies.

No qualitative study of physiotherapists involved in COVID-19 management in the frontline existed in any African country at the time of this study, a gap that this study aimed to fill. This is relevant as respiratory physiotherapy procedures may be aerosol generating, with important implications during this pandemic [1,2]. This is more so in Nigeria where physiotherapists do not routinely have infectious disease expertise. Furthermore, due to the nature of the pandemic, and limited resources in Nigeria, frontline physiotherapists in Nigeria may need material and psychological support. These can promote their health and safety which may be central for safe, effective and efficient patient management [4]. In addition, frontline physiotherapists' experiences of managing COVID-19 patients in Nigeria may inform evidence-based public health policy, and clinical guidelines. The findings from this study can also guide the quality and direction of support provided to physiotherapists to ensure that they are effective in performing their duties. Finally, the results from this study can facilitate multidisciplinary teamwork in managing the pandemic which can positively influence COVID-19 outcomes in Nigeria.

Therefore, the aim of this study was to explore the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria. This study included a Public Involvement and Engagement consultation group to inform the interpretation of results.

Methods

Authors' background

All the authors were academic and/or clinical physiotherapists and included two women and three men. Their areas of specialty included community, cardiopulmonary, paediatric, and orthopaedic physiotherapy. All but one of the authors were working in Nigeria at the time of this study. None of the authors were working as frontline physiotherapists during the COVID-19 pandemic.

Public Involvement and Engagement consultation group

Cardiopulmonary physiotherapists (one from each state) who had been working in acute and critical care settings prior to the COVID-19 pandemic in Nigeria, in the states from which the frontline physiotherapists were recruited were engaged in the later stages of the data analysis to inform the interpretation of results. They provided information on the scope of physiotherapy practice and multidisciplinary functioning and relationships within acute and critical care settings in the states prior to the COVID-19 pandemic in Nigeria. They described the embedding of physiotherapists in the health care institutions before COVID-19, specifically in the ICU and wards of the hospitals.

Study design

Qualitative in-depth semi-structured individual telephone interviews were conducted. The study was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) [9] and the Standards for Reporting Qualitative Research (SRQR) [10].

Study setting

Attempts were made to recruit all frontline physiotherapists managing COVID-19 patients in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in all the states in Nigeria. All data were collected over the phone.

Sample size

Saturation is an ideal methodological principle in qualitative research which often indicates that further data collection and/or analysis of qualitative data is no longer necessary. It is widely regarded as the gold standard for determining adequate sample sizes in qualitative studies. However, there are several and often contradicting conceptualisation of saturation in qualitative research. For instance, data saturation is believed to occur when further qualitative data does not produce new information. Thematic saturation is reached when no new themes emerge from subsequent data. Theoretical saturation is reached when the entire constructs that make up a theory are already characterised in the collected data. Data saturation is reportedly emphasized during qualitative data collection; thematic saturation is seen as important during data analysis; and theoretical saturation is underscored during sampling[11]. We had aimed at recruiting an adequate number of physiotherapists to ensure that data saturation was reached. However, it was discovered during the field work, that only about 20 physiotherapists were involved in the frontline management of COVID-19 in Nigeria at the time of data collection. We therefore decided to take a pragmatic approach, envisaging that recruiting about half of that number would be a realistic expectation. Considering the very small targeted population, we took steps to achieve a sufficient depth and breadth of an understanding of the experiences of the consenting frontline physiotherapists, rather than reaching a state of 'completeness' of data[11] as implied in a more traditional meaning of data saturation.

Participant recruitment

There were only a few physiotherapists managing COVID-19 patients as frontline practitioners (ICU and COVID wards in hospitals, COVID isolation and treatment centres) in a few states in Nigeria.

Therefore, this study attempted to recruit all consenting frontline physiotherapists involved in managing COVID-19 patients in government and private health facilities in Nigeria through purposive and snowball sampling. The physiotherapists were recruited through the national associations and physiotherapy professional groups in Nigeria including the Association of Clinical and Academic Physiotherapists of Nigeria (ACAPN), and the Nigeria Society of Physiotherapy (NSP). Invitation to participate in the study was also circulated through the social media platforms of physiotherapists practising in Nigeria. The eligibility criteria for inclusion in the study and the contact details of the lead author were included in the invitation letter. Instructions on how physiotherapists interested in participating in the study can contact the lead author were also documented. Interested participants who contacted the lead author were then provided a written information sheet about the study via email. The contact details of the interested participants were collected with which their eligibility was determined. Eligible physiotherapists were those redeployed to specifically manage COVID-19 patients in the frontline in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in any of the states in Nigeria. Physiotherapists who had only treated patients who had coincidentally tested positive for the corona virus or who developed the COVID-19 illness during their routine physiotherapy treatment for another health condition were not eligible. Eligible physiotherapists were contacted to identify a convenient day and time for the telephone interviews. Written and verbal informed consent were obtained prior to the interviews.

Procedure for data collection

All interviews were conducted over the telephone, in English and audio recorded by the lead author between August 2020 and January 2021. A semi-structured interview guide (Appendix 1) collected sociodemographic characteristics and explored participants experiences of managing patients with COVID-19 as frontline health workers in health facilities in Nigeria. The questions were informed by the objective of this study, and published literature on the experiences of frontline health workers managing COVID-19 patients around the world. The final set of questions were discussed and subsequently agreed by the study team. The interview guide was flexible allowing for detailed

exploration of experiences. The interviewer (lead author) engaged each participant in a dialogue such that initial questions were modified in line with the content of participant's responses. The interviewer then probed interesting and significant perceptions that appeared, giving each participant the maximum opportunity to tell their own story [12,13].

Data analysis

Data collection was completed and anonymised before data analysis. Interviews were transcribed verbatim in English [14]. Thematic analysis was then applied to the data using the qualitative data analysis software – Taguette (version 0.10.1) [15]. The following six steps of thematic analysis were undertaken: familiarisation with data, generating initial codes, searching for themes, reviewing potential themes, defining and naming themes, and producing the report [14]. For the first stage, the lead author conducted all interviews. Four of the authors including the lead author listened to all audio files, transcribed the interviews, and read and reread the transcripts. These increased familiarisation and immersion in the data. An inductive approach to coding data was used. The lead author performed the initial coding of the entire data which was then discussed with the research team to ensure that the codes were grounded in the data. The initial codes were descriptive and provided the summary of each portion of data. The descriptive codes which had similar or related meanings were then grouped into interpretative or latent codes. These latent codes identified the meanings that lied beneath the descriptive codes linking them together. Themes were then constructed from the descriptive and interpretative codes in an iterative process. Coded data were reviewed for similarity and overlap. Codes which clustered around a similar issue were grouped together in one theme. The relationship between themes and how they combine to produce an overall narrative were explored. The initial themes were reviewed by the study team to ensure that they reflected the original data. Some themes were subsequently left as they were, others were collapsed together or split depending on their coherence and underlying meaning. The resulting themes were then defined, named, and made specific by highlighting the unique meaning of each in line with the research objectives. Finally, the narrative report was produced with nuanced illustrations.

Results

Sociodemographic characteristics of participants

Nine frontline physiotherapists initially indicated interest in participating in the study. One of them subsequently declined participation and did not provide consent and any data. Table 1 presents the sociodemographic characteristics of eight frontline physiotherapists in three states (Enugu, Lagos, and Oyo).

Themes

Table 2 presents the themes produced from the thematic analysis.

Table 2: Themes depicting the experiences of the frontline physiotherapists'

Becoming and remaining part of the COVID-19 team, or finally exiting the team	**Problems with multidisciplinary teamwork**	**Broad ranging impact on physiotherapists' personal and professional lives**	**Lack of support for perceived physiotherapy roles from prevention through to rehabilitation**
The role of personal agency	***Lack of teamwork in the ICU and COVID wards of government hospitals***	Stigmatisation that is wide ranging	Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria
Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist	Discrimination of physiotherapists within COVID-19 teams	*Fear, anger* and having '*off days'*	'*On your own*': lack of material and psychological support
Sense of professionalism	Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres	Feelings of severe loss	Physiotherapists' reliance on self-support and support of one another
The breaking point: finally exiting the team			

1. Becoming and remaining part of the COVID-19 team, or finally exiting the team

The role of personal agency

The physiotherapists reported that their desire and efforts in joining the COVID-19 teams was driven by their own personal motivations rather than any external motivation from the health system or the government.

> *'…it was personal motivation; government did not motivate me in anyway…* (P8).

These included the physiotherapists' innate ability to derive joy in improving patients' lives, wanting to 'do unto others as you would have them do unto you', and the love for adventure and challenges, serving mankind and making impact.

> *'…he [patient] still tells me "thank you for saving my life"…'* (P4).
>
> '*I see it as a ministry...not just an occupation. It's something you do to touch lives* (P5).
>
> *'Personally, I love challenges…' (P7).*
>
> *'…I'd always looked for opportunities to serve...'*(P3).
>
> '*…I'm offering something to the community* (P6).

The physiotherapists' initial fear regarding the virus became replaced with a sense of purpose as they gained experience and confidence in their roles.

Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist

The confidence and desire to be involved in managing COVID-19 patients appeared to be influenced at least in part by previous experience managing highly infectious and potentially fatal diseases.

> *'…being in neuromedicine… I've had to attend to patients with HIV…tuberculosis…hepatitis… So…I just brought forward those …knowledge and precautions…' (P1).*

The cardiopulmonary physiotherapist also appeared to be highly motivated in becoming and remaining part of the COVID-19 team. This appeared to be due to his perception of his expertise in this field into which the pandemic predominantly falls in. He did not appear to be influenced by lack of remuneration or suboptimal provision of other resources. He regarded many COVID-19 related complications as routine in his day-to-day physiotherapy services.

> *'……because my area of specialisation is cardio-respiratory… it's like, a calling to me… I decided … whether they pay me or not, I will go and manage patients that have COVID…'* (P6).

One of the physiotherapists desired to support COVID-19 patients in their periods of pain, difficulties, and hopelessness because of her previous first-hand experience of having life-threatening illnesses.

> *'…I've had series of health conditions myself that got me thinking, will I ever be fine again? So, I've had a first-hand experience of what it feels like to not have hope again. Just stay there and be thinking like…let death just come already…' (P5).*

Sense of professionalism

All the interviewed physiotherapists stated not being initially invited to be part of the COVID-19 teams.

> *'…initially we were not invited… it is actually the physiotherapist that will have to go and be telling them…like an advocacy…Even the presidential taskforce, does not even have physiotherapy…'*(P1).

They were motivated by the desire to publicise the important role of physiotherapy in the successful management of COVID-19 as well as the competence and skills of physiotherapists.

> *'to my knowledge, I was the only physiotherapist in the frontline in the country as at that time. …they saw the consequences of my action…they are now more well informed than they used to be...when the coordinator of the isolation center is talking…he usually makes reference to…physio, there was no time he's giving a progress report that he doesn't make reference to physiotherapy*' (P2).

The efforts yielded some positive outcomes with reports of increasing people within the health system having information about the role of physiotherapy in COVID-19 management.

> *'…the national vice president had written to the NCDC, WHO…because I remember there was a circular from the ministry of health requesting for the training of health professionals, and they requested for physiotherapists…In this way, I think they are getting to know. The national body has also submitted our own guidelines...' (P1).*

Half of the frontline physiotherapists appeared unfazed by their initial lack of recognition by other members of the COVID-19 teams, and believed that other health professionals, particularly medical doctors and nurses, would acknowledge the importance of physiotherapy when they observed the positive clinical effects of their actions on COVID-19 patients. These physiotherapists expressed confidence in the uniqueness of their knowledge and clinical expertise.

> *'…I just usually do not feel bad because I know what I know and I know nobody that is not a physiotherapist knows what I know and cannot do what I do. It was going to be a matter of them appraising their actions before me coming… I acted, I acted, and they saw the result of my actions. They saw the result of my actions, it gave me that feeling of satisfaction, that feeling of "yes, I'm the boss", this field I know it better… I was going to represent not just myself but the profession. I was going in to make a statement, but for me how best to make a statement than your action and the result of your action…I never felt threatened' (P2).*

The breaking point: finally exiting the team

All the interviewed physiotherapists were disappointed that despite their increased advocacy about physiotherapy, and perceived competence in discharging their clinical duties, their recognition and respect within COVID-19 teams in Nigeria remained very poor. They believed that this was associated with the teams being clinically and administratively led by medical doctors.

> *'…We made our clinical presentation about patient management and how we are supposed to be an integral part of the team. We made some recommendations. Then, we met the head of the infectious unit team outside, he told us point-blank that there is no provision for us…' (P7).*

> *'…So many things happened…that suggest we were not recognised. They [doctors] did not see us as important. Why? Because it was the doctors that were coordinating everything. When they were demanding for the names of those that should be paid, they requested forty names*

from the hospital. The coordinator who is a consultant [physician] decided to put the names of all the doctors and left out other health workers including physiotherapists, not even one of them…' (P8).

This led to three of the interviewed physiotherapists wanting to no longer be part of the COVID-19 team after the first COVID-19 wave in Nigeria. They refused to re-join the teams when the second wave started in Nigeria.

'…I was so discouraged that I did not want to be part of the team again. So, when the second wave started…I said I was not going back…'(P7).

2. Problems with multidisciplinary teamwork

All the interviewed physiotherapists expected a multidisciplinary approach to COVID-19 treatment in Nigeria which recognised the role of each professional group, providing equal opportunities for health professionals to bring on their expertise.

'…a multidisciplinary team in which everyone will work together as one without anyone thinking others are inferior…' (P6).

However, the frontline physiotherapists felt that this was deliberately not observed by the medical COVID-19 team leads in the government hospitals.

'…they see a condition that should be referred to "A" they hold it because they have grudges with "A". When they see a condition that should be referred to "C" they don't refer it because they want to take all the glory...whereas nobody is an island, so why not do your part and refer to the next person…(P3).

Lack of teamwork in the ICU and COVID wards of government hospitals

Multidisciplinary teamwork was reported as suboptimal in the government owned COVID-19 treatment and isolation centres and the government hospitals. All the interviewed frontline physiotherapists viewed the nurses as complementary and supportive of their roles, although this

appeared to be sometimes hampered by poor infrastructure such as irregular electricity supply that impacted on the use of suctioning machines.

> *'…Times when I needed to turn the patient and the patient was bigger than me, if I don't get the porter, I could get the ICU nurse to help me out…' (P5).*

> *'…most of the time suctioning is done by nurses in the wards…we may need the patient to be suctioned during treatment. They do that for us. The only problem will be if there is no light and there is no manual suctioning machine…(P1).*

In contrast, the physiotherapists reported that most of the frontline doctors viewed other health professionals including physiotherapists as inferior, disregarding them as team members.

> *'…so the nurse was like…what you did today, I was in awe... The doctor that was on duty was like "don't do that, don't do that, he will asphyxiate…' (P3).*

Consequently, they believed that this led to doctors taking over the role of some multidisciplinary team members in the government hospitals.

> *'…it is the house officers [medical interns] that do the nurse's job…' (P8).*

> *'…the nurses doubled as record officers. I did not actually see them work in the ward…(P7).*

In contrast, multidisciplinary teamwork was perceived as adequate by frontline physiotherapists in the private COVID-19 treatment and isolation centres.

> *'…we had a very strong teamwork and team spirit, so it was really easy...' (P5).*

Discrimination of physiotherapists within COVID-19 teams

The six physiotherapists working in the government-owned COVID-19 health facilities felt that they were treated and regarded less favourably than other health professionals in the COVID-19 teams by the medical team leads.

They perceived that this manifested as lack of remuneration, protective equipment, and accommodation.

'…the doctors are paid, and the physiotherapists are not being paid…' (P6).

'…Doctors are provided accommodation, we are not…'(P7).

Three frontline physiotherapists reported not being informed, tested for COVID-19, or supported in any way when they were exposed to the virus in contrast to their medical colleagues. They believed that their discriminatory experiences were due to interprofessional rivalry.

'…interprofessional rivalry in our clime here…there is nothing the medical doctor will do without having a nurse ... They look at others as competing with them…' (P1).

Three frontline physiotherapists working primarily in the ICU and COVID wards of government hospitals and one frontline physiotherapist working in a private COVID isolation/treatment centre reported attempts to either completely remove physiotherapists from the COVID-19 teams by the government COVID-19 taskforce led by medical doctors, or to side-line physiotherapists by assigning their roles to other health professionals by the hospital medical team leads. Three physiotherapists reported feeling 'alone' and being the lone physiotherapist within their teams in contrast to other professionals. They described relying on their knowledge of medical presentations and clinical expertise to feel comfortable relating with the other health professionals.

'…I felt like a loner because I was the only physiotherapist. Nobody could really relate with me. I couldn't relate with most people. But because of the vast knowledge of my training, in my pre-clinicals we did everything that medical doctors would do…did. So, I could relate with the medical presentations better…' (P3).

Over half of the physiotherapists reported no longer seeking validation from the medical teams after learning to be contented with patients' appreciation of their positive clinical impact.

'…so I wasn't really seeking...the validation from them [medical team leads]…' (P4).

'…I am not here to impress anybody but to make my patient better...' (P6).

Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres

In contrast to the experience of frontline physiotherapists engaged in government hospitals, the two physiotherapists in the private COVID centres felt accepted and recognised by the other team members. This was particularly by the medical team leads, after they had understood physiotherapy roles in COVID-19 management. The physiotherapists greatly appreciated this, and this seemed to encourage and motivate them.

> *'…the medical colleagues … they are a wonderful set of people… they were just treating me like a King... that acceptance from them…gave me the psychological balance to focus on what I wanted to do...' (P3).*

They regarded their acceptance by the medical team leads as even more important than the provision of physiotherapy equipment which was often lacking. These two physiotherapists also reported no discrimination in terms of remuneration, provision of accommodation and other services provided to other members of the COVID-19 team.

> *'…we were paid well…and they foot all the bills' (P3).*
>
> *'…they provided accommodation to us and the other team members…' (P5).*

3. <u>Broad ranging impact on physiotherapists' personal and professional lives</u>

Stigmatisation that is wide ranging

All the physiotherapists reported being stigmatised by physiotherapy colleagues who were not involved in the frontline management of COVID-19 patients, other health professional colleagues, extended family members, friends, acquaintances, or the general public for fear of contracting the virus from them.

'Some people find it offensive when I try to say hi to them from a distance because I am involved with treating COVID-19 patients…(P7).

'I had been hearing about stigma... I didn't really know the impact in the lives of people until I was a front liner you know (sighs). I didn't tell anybody at home, I only told 2 of my siblings, and one of them is a step sibling and he went ahead to mention it errr...in a very demeaning way that err...I should not be allowed to do certain things that I actually wanted to do errrr... I can't go into the details of that because they are my personal life...the stigmatization really got to me for some days and I was like, is it a crime to actually be a health professional that is working to actually salvage his generation…? I think they just took advantage of the information I actually put at his door step and used it against me so I got to know that yes stigma could be a very difficult thing for COVID-19 patients themselves to deal with, so that made me actually know that if somebody is actually positive if he doesn't want to communicate about it I can really relate with him because it is quite difficult what people can do with stigmatization…' (P3).

Two of the physiotherapists who were stigmatised by extended family members, found succour with some of their physiotherapy colleagues and friends.

'…my colleague spoke with me; my friends just encouraged me...she really helped me… I should not put my mind there... I'm doing something very honourable and venerable so I should not allow anybody to get to my head…' (P3).

Friends were the source of stigmatisation for two of the physiotherapists.

'I mentioned it to my friend, since then my friend ran away from me because I was working in the isolation centre…' (P8).

All the physiotherapists were stigmatised by the public.

'…But another challenge we had to deal with was the thought of coming out of the centre, because the centre was located on the island. Even after you finished the work for the day and you clean up... once you step out of the centre, people see that you are coming out of the centre…everybody wants to avoid you...' (P5).

Stigmatisation was reported as the greatest challenge by one of the physiotherapists, and she desired external support. For one of the physiotherapists, stigmatisation by the general public was through social media (Twitter and Facebook). He had gone public about his infection with the virus in a bid to make Nigerians understand the reality of COVID-19 and reduce the conspiracy theories regarding

COVID-19 in Nigeria. He was rather treated with suspicion by the Nigerian public who thought that he was being used by the government. The physiotherapist was consequently concerned about the possible impact of this on his family members.

> *'…people said that the government paid me money…Then I worried about my parents…my siblings...' (P4).*

He therefore avoided informing his family about his involvement and had to rely on the acceptance and support from professional colleagues and religious associates. Consequently, most of the frontline physiotherapists avoided informing family members and friends about their involvement in the frontline. Three of the physiotherapists reported relying on their immediate nuclear family as their only source of support. Physiotherapy colleagues were the source of stigmatisation for two of the frontline physiotherapists, which they found difficult, as they were also dealing with discrimination within COVID-19 multidisciplinary teams.

> *'…they did not provide us accommodation like the doctors and others…so when we get to the department, we were being treated like foreigners, because everybody started avoiding us…' (P7).*

Fear, anger and having 'off days'

All the physiotherapists gained confidence with a clearer understanding of their roles in COVID-19 management. Their initial fear about the uncertainty surrounding COVID-19 was no longer present.

> *'… Now, the fear, has been replaced with a sense of purpose…' (P7).*

All the interviewed frontline physiotherapists were afraid of getting infected with COVID-19 or dying from it in the frontline.

> *'…I mean I got COVID so… I was a bit scared…like…what's going to happen, am I gonna die? (P4).*

One of the physiotherapists was not afraid of death as he assessed his risk as very low, although he also sought spiritual sustenance.

'…I prayed about it and then, I allowed God to take control…' (P6).

Two of the physiotherapists had their fear reinforced through communication with or infection of other COVID-19 team members. They attempted to reduce this fear by taking steps to minimise the severity of a potential disease or by convincing themselves that the benefits of their involvement were worth the risk. For two of the physiotherapists, the fear of getting infected was paralysing, and they described having 'off days' in relation to this, when they felt like being alone, and not being involved in activities they usually enjoyed.

'…I was feeling scared, …really really scary, and I was really really down…' (P2).

They described critically analysing their risk of exposure and infection during such 'off days'. Recovery from this debilitating fear was facilitated by convincing themselves that they were unlikely to have been exposed and infected or feeling that they were unlikely to experience a severe disease even when infected, or remembering their patients with COVID-19 who were relying on them for survival.

'…those that died … are those having comorbidities, … I didn't think I fit into that category…' (P2).

'…the thought of the patients looking up to me made me want to get up…' (P3).

One of the physiotherapists reported becoming angry at getting infected with the virus whilst working in the frontline. He blamed himself and regretted exposing himself and his family members to the virus in a health system that did not even acknowledge or appreciate his role as a physiotherapist.

'I was angry because I got it because I volunteered. In the western world, when volunteers go to an active environment, they are well protected. Coming into an environment where you are not even acknowledged…' (P7).

All the physiotherapists felt that exposure to the virus and infection of some of their colleagues was due to inadequate provision of personal protective equipment (PPE), and lack of support from both the health system and the government.

The fear of infecting beloved family members had severe impact on physiotherapists' personal lives and mental health. Family interaction and relationship became adversely affected as they stopped or minimised contact with their close family members in an attempt to protect them.

> *'…I would just get home and lock myself in the room… because of the fear…' (P5).*
>
> *'…my wife, …was pregnant, so we had to keep distance…' (P8).*

All the frontline physiotherapists were also dreading the possibility of losing their patients to complications of COVID-19.

> *'…Scary in terms of those in the ICU, on oxygen, with an SPO2 of below 80, nobody wants a patient to die in his hands…' (P2).*
>
> *'…as I am treating the patient, I will be like arrrh, this patient might not do well…(P6).*

Feelings of severe loss

All the frontline physiotherapists expressed feelings of severe loss in terms of prolonged use of uncomfortable and restrictive clothing; little or no physical contact or support from family and friends; diminished social circle from reduced religious and other social activities; reduced physical activity; adverse economic outcomes from loss of income from private practice; increased transportation costs; and their patients dying of COVID-19 complications.

> *'…having to wear a facemask every day, …the back of my ears… are beginning to hurt (P4).*
>
> *'…We have to protect ourselves with all these uncomfortable stuffs…' (P8).*
>
> *'…limited my movement… Visiting friends has drastically reduced… churches were even locked up…' (P1).*

'I had to avoid everybody, I had to avoid my wife, I had to avoid my kids, I had to be locked up…' (P7).

'…we were accommodated …so I had to change my environment totally, I changed my friends, I changed everything...' (P3).

'…affected my work… I'm a private practitioner and patients were not coming (P3).

'…but when the pandemic came …the cash flow was going down. There was financial strain… The financial impact affected me personally' (P7).

'…before, I could easily use a public transport…now I have to use Uber so it's even more costly…' (P5).

4. Lack of support for perceived physiotherapy roles from prevention through to rehabilitation

All the frontline physiotherapists believed they were supposed to be involved in preventive efforts, therapeutic strategies, and long/short-term rehabilitation. Preventive efforts entailed primary prevention of infection and secondary prevention of severe disease. The frontline physiotherapists emphasized increasing physical fitness and reducing deconditioning from COVID-19 lockdowns.

All but one of the frontline physiotherapists were not cardiopulmonary physiotherapists and they reported also fulfilling these roles.

'*We all had to adapt as respiratory physiotherapists…' (P7).*

This could be because many cardiopulmonary physiotherapists were not recommended to the frontline by their departments.

'…the department [physiotherapy] started choosing those who will go first … I realised that I wasn't among those who were going…' (P6).

Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria

All the interviewed physiotherapists reported being suboptimally involved in the therapeutic stages of COVID-19 management. They also did not view themselves as adequately involved in preventive efforts and in the rehabilitation and long-term management of the complications from the disease.

'they have…post infection symptoms, a lot of them require physiotherapy…but we don't see them' (P1).

'On your own': lack of material and psychological support

All but two frontline physiotherapists felt unsupported by the health system and the government. They interpreted the lack of provision of PPE, lack of sanitation facilities, lack of remuneration and allowances, and lack of health and life insurance in the case of infection, severe disease, and death, as very discouraging.

'…… we don't feel confident that if you get infected that you are not on your own…' (P1).

'…we don't have equipment, we don't have good funding, remuneration is zero…' (P2).

'*The PPEs were not the best quality, … I had no help; I had no support…I was not even paid…' (P7).*

Physiotherapists' reliance on self-support and support of one another

All six frontline physiotherapists in the government facilities reported learning to manage their expectations and depend only on themselves and fellow frontline physiotherapists. More senior physiotherapists were supporting and guiding the younger ones.

'…and you call them [junior physiotherapists] before they start their work. …how was your night? Ask about their health. … And then try to explain to them what happened the previous day. If they have some cases that they think they [junior physiotherapists] need special information about, we [senior physiotherapists] try to do that for them…' (P1).

Discussion

Statement of principal findings

The study explored the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria. Results highlighted that the physiotherapists' desire to be included in the COVID-19 teams in Nigeria seemed to be predominantly driven by their personal agencies, sense of professionalism, previous experience managing highly infectious diseases, or being a cardiopulmonary physiotherapist.

The frontline physiotherapists, particularly those in the government hospitals in Nigeria, felt that the road to becoming members of the COVID-19 team was arduous and came about through their own sustained advocacy. Even so, some of them exited the team, and were no longer involved in the frontline out of frustration. This was because they could no longer cope with the perceived psychological, emotional, and financial impact of feeling discriminated against.

Interpretation within the context of the wider literature

In contrast to the findings of this current study, the availability or lack thereof of PPE and COVID-19 allowances were reported as a general problem affecting health workers in other studies in Nigeria [16,17], and China [4,5] which did not include physiotherapists. Inadequate provision of PPE appeared to be affecting all health care professionals equally in studies that included physiotherapists in the UK and Spain [7,8].

Discriminatory experiences reported by the frontline physiotherapists is a novel finding in this study and has not been reported by other studies. The frontline physiotherapists felt that they were not regarded as legitimate frontline members of the COVID-19 teams in Nigeria. The frontline physiotherapists in government hospitals expressed discrimination in relation to lack of remuneration, inadequate provision of PPE and accommodation plus little or no professional recognition by medical team leads. In contrast, the frontline physiotherapists in the private COVID isolation and treatment centres in Nigeria reported being recognised, respected, and supported by their medical team leads and other healthcare professionals in their teams. There were no reports of any form of discrimination from the only qualitative studies of physiotherapists who were practising in the United Kingdom and Spain[7,8]. Discrimination of physiotherapists as frontline healthcare workers in the COVID-19 pandemic in Nigeria may be associated with the interprofessional rivalry known to exist in the Nigerian health sector [18–22]. The perceived or actual discrimination of other healthcare professionals by some medical team leads in Nigeria might hamper professional autonomy, professional identity, professional expertise and interprofessional harmony. Another reason for the discrimination of physiotherapists

as frontline healthcare workers, particularly in the hospitals, could be because the COVID-19 teams in these facilities were led by infectious disease medical experts. These specialists may have had little or no clinical interaction with physiotherapists in the hospitals prior to the COVID-19 pandemic probably due to their limited involvement in acute care settings in Nigeria. It is therefore not surprising that the frontline physiotherapists felt that their roles in health promotion, disease prevention, treatment, and rehabilitation in relation to the pandemic were not adequately utilised. This might have adverse implications for patients with COVID-19 in Nigeria.

The lack of multidisciplinary teamwork and the perceived discrimination of physiotherapists in the frontline by the team leads might undermine an effective response to the COVID-19 pandemic in Nigeria. Teamwork is required for optimal quality and safety of patients, the well-being of healthcare professionals, and good financial outcomes for healthcare systems[23]. Experts have reported that scarce resources during pandemics can trigger biases against other professionals, with team leads likely to protect only their own group[23]. This can stifle communication between team members, and the coordination of equipment and other materials across professions and organisations that are critical in implementing an effective response to the COVID-19 pandemic[23]. It is recommended therefore, that teamwork be characterised by effective coordination of expertise across professional groups. Communication between professional groups should be accurate, timely, cordial and reflective to enhance quality of care, and the financial output of health care institutions[23]. The Nigerian health system need to encourage clinical team leads that acknowledge the diversity of multidisciplinary team members required in effectively and efficiently managing the pandemic. Although hierarchy is a key feature of healthcare systems and fosters coordination, it can also hamper inclusiveness[23]. Inclusive behaviour from team leads can ensure that members from other professional fields can feel psychologically safe to participate and collaborate with multidisciplinary team members. Medical doctors lead the COVID-19 teams in Nigeria. In high income countries, physiotherapists and other healthcare professionals have also successfully led COVID-19 teams. The Nigerian healthcare system needs to adopt a multidisciplinary team orientation with leadership that

ensures the individual well-being of all health professionals within COVID-19 teams. This can be a great asset in the current and future infectious disease pandemics in Nigeria.

It was surprising that only one of the interviewed frontline physiotherapists was a cardiopulmonary physiotherapist. Comparison with previous studies is impossible because they did not specify the physiotherapists' specialty areas [7,8]. The only cardiopulmonary physiotherapist in this study reported not being initially put forward to join the COVID-19 team. He reported making personal efforts that made him to be included later. Similarly, one of the cardiopulmonary physiotherapists in the Public Involvement and Engagement consultation group also reported not being invited to join the COVID-19 multidisciplinary team as a frontline physiotherapist. He reported that despite being the only cardiopulmonary physiotherapist in his hospital, his physiotherapy department recommended physiotherapists from other specialty areas to join the COVID-19 team. The reason for this finding is unclear. However, the results of this study suggest that previous experience managing highly infectious diseases may have been the major factor influencing the recommendation from physiotherapy departments. This might explain why the highest number of the frontline physiotherapists were neurophysiotherapists. In contrast, the private COVID-19 centres were reported to have advertised for any available physiotherapists which may have led to none of their recruited frontline physiotherapists being cardiopulmonary physiotherapists. This finding could be related to the few cardiopulmonary physiotherapists currently working in Nigeria [24]. The involvement of mostly non-cardiopulmonary physiotherapists in the management of COVID-19 patients in the frontline in Nigeria might have meant that the frontline physiotherapists did not demonstrate the level of cardiopulmonary expertise that would have been the case for cardiopulmonary physiotherapists. This might partly explain the medical team leads underestimating the potential role of the frontline physiotherapists in COVID-19 management in Nigeria. However, the frontline physiotherapists reported experiencing discrimination prior to being given any opportunity to demonstrate their expertise. The reported interprofessional rivalry between medical doctors and other healthcare professionals in Nigeria [18–20] may therefore be more important than the level of expertise of frontline

physiotherapists in explaining the feelings of discrimination reported by the frontline physiotherapists.

Reports of stigmatisation, fear, anger, feelings of severe loss, and lack of material and psychological support were common findings in other studies. Physiotherapists in this study had experiences of stigmatisation from physiotherapy colleagues who were not engaged in the frontline, other health professional colleagues, family members, friends, acquaintances, or the public. In contrast, physiotherapists in other countries did not report stigmatisation from their neighbours, acquaintances and the general public as physiotherapists were usually not perceived as being in regular contact with potentially infectious patients in their routine duties in those countries [7,8]. In Nigeria, the public often do not understand the difference between physiotherapists and medical doctors which might at least partly explain the stigmatisation of frontline physiotherapists by the public. There were no reports of stigmatisation from physiotherapy colleagues, other health professional colleagues, family members and friends in these studies [7,8]. In contrast, physicians and nurses managing COVID-19 patients were stigmatised by the general public in Iran [25].

The fear experienced by frontline physiotherapists in Nigeria were in relation to the novelty of the virus, fear of infection, having severe disease, dying from the disease, or transmitting it to their loved ones. This aligns with findings from physiotherapists in other countries including the United Kingdom [7] and Spain [8], and experiences of other health professionals including physicians and nurses in China [4,5], and Iran [25]. The frontline physiotherapists in Nigeria felt anger in response to getting infected whilst performing a duty for which they perceived they were not acknowledged by the team leads and the health system. Anger was experienced by frontline health workers in relation to the perception of abandonment by the government and breaking of lockdown guidelines in the United Kingdom [7]. Frontline physiotherapists in Spain felt anger at the roller coaster of other emotions they were feeling including fear, sadness, illusion, rage, uncertainty, panic, worry, grief, loneliness, and anxiety [8]. Feelings of severe loss expressed in terms of restrictive uncomfortable clothing, loss of physical

contact with family and loved ones, loss of spiritual activities, reduced physical activity and loss of income from private practice due to the lockdown align with findings from other studies [3–5,7,8,25]. The complaints about the lack of provision of equipment, lack of emotional and psychological support in the government hospitals, and feelings of abandonment reported by the frontline physiotherapists in Nigeria have been felt elsewhere [7].

Strengths and limitations

Despite the novelty of this study, its limitation was that data saturation could not be established due to the limited number of physiotherapists engaged in the frontline management of COVID-19 in Nigeria. Only eight of these physiotherapists consented to participate from the pool of about 20 physiotherapists engaged in managing COVID-19 patients in the frontline in Nigeria at the time of this study.

Implications for policy, practice, and research

Increased advocacy for physiotherapy (particularly cardiopulmonary physiotherapy) involvement in managing COVID-19 is required in Nigeria. Frontline physiotherapists involved in managing COVID-19 patients in Nigeria need to be better supported materially and psychologically, although they may need to increase their level of expertise in this area. Nigeria needs a more inclusive healthcare system with team leads that respect and engage other frontline healthcare professionals for the effective management of the current pandemic and in preparation for future pandemics.

Conclusions

Physiotherapists managing COVID-19 patients in the frontline in Nigeria felt that they were not regarded as legitimate members of the COVID-19 multidisciplinary teams by the medical team leads and the health system. Their experiences of discrimination were made worse by experiences of stigmatisation from extended family members, colleagues, and the public, coupled with perceived material and psychological losses due to the COVID-19 pandemic.

Declarations

Contributorship: CNI-C conceived and designed the study supported by RG. CNI-C collected the data supported by RG. CNI-C analysed and interpreted the data, supported by CA, AA, EA and RG. CNI-C drafted the initial manuscript supported by RG. All authors contributed to a revised edition of the manuscript and CNI-C prepared the final manuscript.

Ethics and other permissions: Ethical approval was obtained from the University of Nigeria Teaching Hospital (NHREC/05/01/2008B-FWA00002458-1RB00002323-July 2020). Written information about the objectives of the study was emailed to eligible participants who indicated interest in participating. A written and verbal consent was obtained prior to interviewing.

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Appendix 1: interview schedule

1. Demographic information

Age

Gender

Education

Specialisation

Years of practice

2. Could you tell me about becoming a physiotherapist?

3. What do you like most about being a physiotherapist?

4. Could you tell me what led to you becoming involved in caring for patients with COVID-19?

5. Could you tell me about the activities you undertake in working with patients with COVID-19?

   Probe for knowledge; skills; social/professional role and identity; beliefs about capabilities; beliefs about consequences; environmental factors.

6. What do you think about the way COVID-19 is being managed in your health facility?

   Prompts: What are the expectations on you managing COVID-19? What are the facilitators or barriers to your treatment of COVID-19?

7. How has it been for you since COVID-19 started in Nigeria?

   Prompts: What are the differences between work before the pandemic and during the pandemic? What are the changes and challenges in your work since COVID-19?

8. What is it like for you to care for COVID-19 patients?

Prompts: How does it make you feel? What were your feelings before the pandemic, during the first day of COVID-19 treatment and currently?

9. How have you coped with the changes and challenges in your work since COVID-19?

   Prompt: Has anything helped or made things more difficult? What is the available support and what support do you still need?

10. Can you tell me a bit about the relationship between your work and personal life?

    Prompts: What was it like before COVID-19? What is it like now?

11. Is there anything else you want to tell me that I haven't given you the chance to talk about? Probe for insights they may have had from this pandemic.

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1/1-3
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	1-2/6-35
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	2-3/37-68
Purpose or research question - Purpose of the study and specific objectives or questions	3/69-71
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	3-7/86-166
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	3-4/73-77
Context - Setting/site and salient contextual factors; rationale**	4/90-93
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	4-6/94-132
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	26/669-672
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	6/133-144

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	6, supplementary file 1/133-144, supplementary file 1
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	7/168-175
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	6-7/146-166
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	6-7/145-166
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	7/152-161

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-20/179-523
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	7-20/184-527

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	21-26/529-663
Limitations - Trustworthiness and limitations of findings	25/643-648

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	26/675
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	26/673-674

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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'Discriminated against, stigmatised, afraid and on their own': a qualitative investigation of the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria

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'Discriminated against, stigmatised, afraid and on their own': a qualitative investigation of the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria

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Running head: Frontline physiotherapists managing COVID-19 in Nigeria

Abstract

Objectives

Evidence-based guidelines recommend physiotherapy in the respiratory treatment and physical rehabilitation of patients with COVID-19. It is unclear to what extent physiotherapy services are utilised in the frontline management of COVID-19 in Nigeria. Therefore, this study aimed to explore the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria.

Methods

This was an exploratory qualitative study of all consenting physiotherapists managing COVID-19 patients in the frontline in Nigeria. Qualitative in-depth semi-structured telephone interviews were conducted and transcribed verbatim. Transcripts were thematically analysed. The settings were ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in Nigeria. The participants were all consenting frontline physiotherapists managing COVID-19 patients in Nigeria.

Results

Eight frontline physiotherapists (three neurological physiotherapists, two orthopaedic physiotherapists, one cardiopulmonary physiotherapist, one sports physiotherapist and one rotational physiotherapist) provided consent and data for this study. Four themes and thirteen subthemes were generated illustrating discriminatory experiences of frontline physiotherapists, particularly from COVID-19 team leads; lack of multidisciplinary teamwork within COVID-19 teams; wide ranging stigmatisation from extended family members, colleagues, friends, and the general public; material and psychosocial personal losses; lack of system support; and suboptimal utilisation of physiotherapy in the management of COVID-19 in Nigeria. Personal agency, sense of professionalism, previous experience managing highly infectious diseases, and being a cardiopulmonary physiotherapist were the factors that made the frontline physiotherapists to become involved in managing COVID-19 patients. However, discriminatory experiences made some of these physiotherapists to stop being involved in the management of COVID-19 patients in the

frontline. Most of the frontline physiotherapists were not cardiopulmonary physiotherapists which may have influenced their level of expertise, multidisciplinary involvement, and patient outcomes.

Conclusions
Currently, there is suboptimal involvement and support for physiotherapists, particularly cardiopulmonary physiotherapists treating COVID-19 patients in the frontline in Nigeria.

Keywords
Physiotherapists, Physical Therapists, COVID-19, Qualitative research, Nigeria, Africa

Strengths and limitations of this study

- All consenting physiotherapists managing COVID-19 patients in the frontline in Nigeria were interviewed.
- A Public Involvement and Engagement consultation group informed the interpretation of results.
- Telephone interviews preclude the identification of non-verbal cues which might have influenced the interpretation of findings.
- Data saturation could not be established with eight frontline physiotherapists.
- The few frontline physiotherapists involved in this study (eight) reflects the very few physiotherapists overall (about twenty) engaged to serve in the frontline during the pandemic in Nigeria.

Introduction

Physiotherapy is recommended in the respiratory treatment and physical rehabilitation of patients with COVID-19 [1]. Physiotherapy may be indicated in the cases of COVID-19 patients who present with productive cough and are unable to clear secretions independently. High-risk patients are those with existing comorbidities associated with hypersecretion or ineffective cough (e.g., neuromuscular

disease, respiratory disease, and cystic fibrosis), and they require physiotherapy. Physiotherapy is indicated for ventilated patients who show signs of inadequate airway clearance requiring airway clearance techniques. Patients with severe respiratory failure associated with COVID-19 may require prone position to optimise oxygenation, and this should be overseen by the physiotherapist. Patients with ICU-acquired weakness due to prolonged protective lung ventilation, sedation and use of neuromuscular blocking agents require initiation of early rehabilitation by the physiotherapist after the acute phase of respiratory distress [1,2].

Psychological distress is known to accompany infectious disease pandemics. This was present during the first severe acute respiratory syndrome (SARS) outbreak of 2002-2004. Up to 30% of healthcare workers in Toronto (Canada) experienced emotional distress, and 75% of healthcare workers in Taiwan and 21% of healthcare workers in Singapore, experienced psychiatric morbidity. Fear of contagion, feelings of stigmatization, loneliness, boredom, anger, anxiety, and a sense of uncertainty were commonly reported amongst healthcare workers[3]. A systematic review of quantitative studies on the impact of the current SARS Coronavirus 2 (SARS-CoV-2) pandemic on the mental health of healthcare workers in hospital settings found a high burden of mental health problems. These included depression (13.5%-44.7%), anxiety (12.3%-35.6%), acute stress reaction (5.2%-32.9%), post-traumatic stress disorder (7.4% 37.4%), insomnia (33.8%-36.1%), and occupational burnout (3.1%-43.0%). Healthcare workers with low social support had the worst psychological outcomes[4]. Italian physiotherapists were shown to be afraid of their families and colleagues getting infected with the SARS-CoV-2 virus, which aggravated stress and anxiety, which were ameliorated by messages of solidarity nationally and from around the world through provision of support and resources. Adequate preventive measures to protect patients, physiotherapists and other health professionals from infection, availability of remote working facilities such as smart-working, telemedicine systems, and adequate funding for services were some of the support and resources provided[5].

Limited qualitative studies have explored the experiences of frontline physiotherapists managing COVID-19 patients globally. Most qualitative studies have explored the experiences of physicians and nurses in China and Europe [6–9]. More recent qualitative studies have included physiotherapists among other health professionals in the United Kingdom [10] or involved only physiotherapists in Spain [11]. Traumatising and shocking experiences, limited material resources, feelings of a sense of duty despite significant personal risks, challenges managing a novel condition, resilience despite working challenges, and the need for support were common findings across these studies.

No qualitative study of physiotherapists involved in COVID-19 management in the frontline existed in Nigeria at the time of this study, a gap that this study aimed to fill. This is relevant as respiratory physiotherapy procedures may be aerosol generating, with important implications during this pandemic [1,2]. This is more so in Nigeria where physiotherapists do not routinely have infectious disease expertise. Furthermore, due to the nature of the pandemic, and limited resources in Nigeria, frontline physiotherapists in Nigeria may need material and psychological support. It is known that enhancing the psychological wellbeing of health care workers can enhance vigilance and the fight against emerging infectious diseases[3]. Providing material and psychological support to frontline physiotherapists can promote their health and safety which may be central for safe, effective and efficient patient management [7]. In addition, frontline physiotherapists' experiences of managing COVID-19 patients in Nigeria may inform evidence-based public health policy, and clinical guidelines. The findings from this study can also guide the quality and direction of support provided to physiotherapists to ensure that they are effective in performing their duties. Finally, the results from this study can facilitate multidisciplinary teamwork in managing the pandemic which can positively influence COVID-19 outcomes in Nigeria. It has been recommended that the treatment of COVID-19 be performed by the efforts of a multidisciplinary team. Team members need to have the same goal of ensuring that patients have improved signs and symptoms and can continue their daily activities independently. These goals can be achieved through efficient communication and collaboration amongst team members. Multidisciplinary efforts are vital in reducing the impact of the acute period

of the disease, and treating, rehabilitating and reintegrating people after COVID-19[5,12]. Unfortunately, the Nigerian health system is plagued by challenges arising from lack of collaborative practice among healthcare professionals, interprofessional conflict and rivalry[13].

Therefore, the aim of this study was to explore the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria. This study included a Public Involvement and Engagement consultation group to inform the interpretation of results.

Methods

Authors' background

All the authors were academic and/or clinical physiotherapists and included two women and three men. Their areas of specialty included community, cardiopulmonary, paediatric, and orthopaedic physiotherapy. All but one of the authors were working in Nigeria at the time of this study. None of the authors were working as frontline physiotherapists during the COVID-19 pandemic.

Patient and Public Involvement

A Public Involvement and Engagement consultation group was recruited to inform the interpretation of results. Cardiopulmonary physiotherapists (one from each state) who had been working in acute and critical care settings prior to the COVID-19 pandemic in Nigeria, in the states from which the frontline physiotherapists were recruited were engaged in the later stages of the data analysis to inform the interpretation of results. They provided information on the scope of physiotherapy practice and multidisciplinary functioning and relationships within acute and critical care settings in the states prior to the COVID-19 pandemic in Nigeria. They described the embedding of physiotherapists in the health care institutions before COVID-19, specifically in the ICU and wards of the hospitals.

Study design

Qualitative in-depth semi-structured individual telephone interviews were conducted. The study was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) [14] and the Standards for Reporting Qualitative Research (SRQR) [15].

Study setting

Nigeria has the largest population in Africa with over 200 million people in 2022. Nigeria has the seventh largest population in the world with 36 states and one federal capital territory. Lagos state currently has the largest population with 15.3 million people whilst Bayelsa state has the smallest population with about 2.7 million people[16]. Despite the large population of Nigeria, there is a shortage of physiotherapists due to unfavourable working conditions that lead to brain drain and the search of greener pastures. Out of about 5,000 physiotherapists licensed to practise in Nigeria, only about 2,000 physiotherapists are currently practising in Nigeria. About 30% of physiotherapists licensed to practice in Nigeria presently practice abroad. The remaining physiotherapists are currently unemployed[17]. The World Physiotherapy website records an even lower number of 790 member physiotherapists currently registered with the Nigeria Society of Physiotherapy[18]. The patient/clinician ratio for physiotherapy in Nigeria is very poor with about 0.047 physiotherapists per 1000 of the population[19].

Attempts were therefore made to recruit all frontline physiotherapists managing COVID-19 patients in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in all the states in Nigeria and the federal capital territory.

Sample size

Saturation is an ideal methodological principle in qualitative research which often indicates that further data collection and/or analysis of qualitative data is no longer necessary. It is widely regarded as the gold standard for determining adequate sample sizes in qualitative studies. However, there are several and often contradicting conceptualisation of saturation in qualitative research. For instance,

data saturation is believed to occur when further qualitative data does not produce new information. Thematic saturation is reached when no new themes are identified from subsequent data. Theoretical saturation is reached when the entire constructs that make up a theory are already characterised in the collected data. Data saturation is reportedly emphasized during qualitative data collection; thematic saturation is seen as important during data analysis; and theoretical saturation is underscored during sampling[20]. We had aimed at recruiting an adequate number of physiotherapists to ensure that data saturation was reached. However, it was discovered during the field work, that only about 20 physiotherapists were involved in the frontline management of COVID-19 in Nigeria at the time of data collection. We therefore decided to take a pragmatic approach, envisaging that recruiting about half of that number would be a realistic expectation. Considering the very small targeted population, we took steps to achieve a sufficient depth and breadth of an understanding of the experiences of the consenting frontline physiotherapists, rather than reaching a state of 'completeness' of data[20] as implied in a more traditional meaning of data saturation.

Participant recruitment

There were only a few physiotherapists managing COVID-19 patients as frontline practitioners (ICU and COVID wards in hospitals, COVID isolation and treatment centres) in a few states in Nigeria. Therefore, this study attempted to recruit all consenting frontline physiotherapists involved in managing COVID-19 patients in government and private health facilities in Nigeria through purposive and snowball sampling. The physiotherapists were recruited through the national associations and physiotherapy professional groups in Nigeria including the Association of Clinical and Academic Physiotherapists of Nigeria (ACAPN), and the Nigeria Society of Physiotherapy (NSP). Invitation to participate in the study was also circulated through the social media platforms of physiotherapists practising in Nigeria. The eligibility criteria for inclusion in the study and the contact details of the lead author were included in the invitation letter. Instructions on how physiotherapists interested in participating in the study can contact the lead author were also documented. Interested participants

who contacted the lead author were then provided a written information sheet about the study via email. The contact details of the interested participants were collected with which their eligibility was determined. Eligible physiotherapists were those redeployed to specifically manage COVID-19 patients in the frontline in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in any of the states in Nigeria. Physiotherapists who had only treated patients who had coincidentally tested positive for the corona virus or patients who developed the COVID-19 illness during their routine physiotherapy treatment for another health condition were not eligible. Eligible physiotherapists were contacted to identify a convenient day and time for the telephone interviews. Written and verbal informed consent were obtained prior to the interviews.

Procedure for data collection

All interviews were conducted over the telephone, in English and audio recorded by the lead author between August 2020 and January 2021. A semi-structured interview guide (Appendix 1) collected sociodemographic characteristics and explored participants experiences of managing patients with COVID-19 as frontline health workers in health facilities in Nigeria. The questions were informed by the objective of this study, and published literature on the experiences of frontline health workers managing COVID-19 patients around the world. The final set of questions were discussed and subsequently agreed by the study team. The interview guide was flexible allowing for detailed exploration of experiences. The interviewer (lead author) engaged each participant in a dialogue such that initial questions were modified in line with the content of participant's responses. The interviewer then probed interesting and significant perceptions that appeared, giving each participant the maximum opportunity to tell their own story [21,22].

Data management and analysis

Data collection was completed and anonymised before data analysis. Interviews were transcribed verbatim in English [23] [CNI-C transcribed 2 transcripts; CA transcribed 3 transcripts; AA transcribed 2 transcripts; EA transcribed 1 transcript]. CNI-C then applied thematic analysis to the data using the

qualitative data analysis software – Taguette (version 0.10.1) [24]. The following six steps of thematic analysis were undertaken: familiarisation with data, generating initial codes, searching for themes, reviewing potential themes, defining and naming themes, and producing the report [23]. For the first stage, CNI-C conducted all interviews. CNI-C, CA, AA, and EA listened to all audio files. CNI-C transcribed the interviews and read and reread the transcripts. These increased familiarisation and immersion in the data. An inductive approach to coding data was used[25]. The lead author performed the initial coding of the whole data which was then discussed with the entire research team to ensure that the codes were grounded in the data. The initial codes were descriptive and provided the summary of each portion of data. The descriptive codes which had similar or related meanings were then grouped into interpretative or latent codes. These latent codes identified the meanings that lied beneath the descriptive codes linking them together. Themes were then constructed from the descriptive and interpretative codes in an iterative process. Coded data were reviewed for similarity and overlap. Codes which clustered around a similar issue were grouped together in one theme. The relationship between themes and how they combine to produce an overall narrative were explored. The initial themes were reviewed by the study team to ensure that they reflected the original data. Some themes were subsequently left as they were, others were collapsed together or split depending on their coherence and underlying meaning. The resulting themes were then defined, named, and made specific by highlighting the unique meaning of each in line with the research objectives. Finally, the narrative report was produced with nuanced illustrations.

Results

Sociodemographic characteristics of participants

Nine frontline physiotherapists initially indicated interest in participating in the study. One of them subsequently declined participation and did not provide consent and any data. Table 1 presents the sociodemographic characteristics of eight frontline physiotherapists in three states (Enugu, Lagos, and Oyo).

Table 1: Sociodemographic characteristics of the frontline physiotherapists

AGE	Frequency	%
20-29	2	25.0
30-39	2	25.0
40-49	4	50.0
SEX		
Male	7	87.5
Female	1	12.5
EDUCATION		
Bachelor	5	62.5
MSc	2	25.0
MSc & MD Homeopathy	1	12.5
SPECIALISATION AREA		
Neurological physiotherapy	3	37.5
Orthopaedic physiotherapy	2	25.0
Cardiopulmonary physiotherapy	1	12.5
Sports physiotherapy	1	12.5
Rotation/general practice	1	12.5
YEARS OF PRACTICE		
0-4	1	12.5
5-9	3	37.5
10-14	2	25.0
15-19	2	25.0
DESIGNATION		
Deputy Director	1	12.5
Assistant director	3	37.5
Principal physiotherapist	1	12.5
Private practitioner	2	25.0
Intern physiotherapist	1	12.5
COVID-19 FACILITY		
Government hospital	5	62.5
Government owned isolation/treatment centre	1	12.5
Privately owned isolation/treatment centre	2	25.0

*Clinical physiotherapists' cadres in Nigeria: Director – the highest cadre of physiotherapy clinical practice in Nigeria and are usually appointed head of clinical physiotherapy departments. Deputy director – the second to the highest cadre of physiotherapy clinical practice in Nigeria and are usually appointed head of clinical physiotherapy specialty units or heads of clinical physiotherapy departments in the absence of a director of physiotherapy. Assistant director – the next lower rank to the deputy director and are usually specialist physiotherapists as the two more senior cadres and can be appointed heads of clinical physiotherapy specialty areas in the absence of a deputy director. Principal physiotherapist –senior level clinical physiotherapist specialising in a specific physiotherapy specialty area. Senior physiotherapist – first senior level clinical physiotherapy cadre involving rotatory postings through the different physiotherapy specialty areas. Corper physiotherapist – junior clinical physiotherapist undergoing rotatory postings through the different physiotherapy specialty areas and can be regarded as the second year of clinical experience/training post-graduation. Intern physiotherapist – junior clinical physiotherapist undergoing rotatory postings through the different physiotherapy specialty areas and can be regarded as the first year of clinical experience/training post-graduation.

Themes

Table 2 presents the themes produced from the thematic analysis.

Table 2: Themes depicting the experiences of the frontline physiotherapists'

Themes	**Becoming and remaining part of the COVID-19 team, or finally exiting the team**	**Problems with multidisciplinary teamwork**	**Broad ranging impact on physiotherapists' personal and professional lives**	**Lack of support for perceived physiotherapy roles from prevention through to rehabilitation**
Subthemes	The role of personal agency	Lack of teamwork in the ICU and COVID wards of government hospitals	Stigmatisation that is wide ranging	Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria
	Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist	Discrimination of physiotherapists within COVID-19 teams	*Fear, anger* and having '*off days'*	'*On your own*': lack of material and psychological support
	Sense of professionalism	Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres	Feelings of severe loss	Physiotherapists' reliance on self-support and support of one another
	The breaking point: finally exiting the team			

1. **<u>Becoming and remaining part of the COVID-19 team, or finally exiting the team</u>**

The role of personal agency

The physiotherapists reported that their desire and efforts in joining the COVID-19 teams was driven by their own personal motivations rather than any external motivation from the health system or the government.

'…it was personal motivation; government did not motivate me in anyway… (P8).

These included the physiotherapists' innate ability to derive joy in improving patients' lives, wanting to 'do unto others as you would have them do unto you', and the love for adventure and challenges, serving mankind and making impact.

'…he [patient] still tells me "thank you for saving my life"…' (P4).

'*I see it as a ministry...not just an occupation. It's something you do to touch lives* (P5).

'Personally, I love challenges…' (P7).

'…I'd always looked for opportunities to serve...'(P3).

'*…I'm offering something to the community* (P6).

The physiotherapists' initial fear regarding the virus became replaced with a sense of purpose as they gained experience and confidence in their roles.

Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist

The confidence and desire to be involved in managing COVID-19 patients appeared to be influenced at least in part by previous experience managing highly infectious and potentially fatal diseases.

'…being in neuromedicine… I've had to attend to patients with HIV…tuberculosis…hepatitis… So…I just brought forward those …knowledge and precautions…' (P1).

The cardiopulmonary physiotherapist also appeared to be highly motivated in becoming and remaining part of the COVID-19 team. This appeared to be due to his perception of his expertise in this field into which the pandemic predominantly falls in. He did not appear to be influenced by lack

of remuneration or suboptimal provision of other resources. He regarded many COVID-19 related complications as routine in his day-to-day physiotherapy services.

'……because my area of specialisation is cardio-respiratory… it's like, a calling to me… I decided … whether they pay me or not, I will go and manage patients that have COVID…' (P6).

One of the physiotherapists desired to support COVID-19 patients in their periods of pain, difficulties, and hopelessness because of her previous first-hand experience of having life-threatening illnesses.

'…I've had series of health conditions myself that got me thinking, will I ever be fine again? So, I've had a first-hand experience of what it feels like to not have hope again. Just stay there and be thinking like…let death just come already…' (P5).

Sense of professionalism

All the interviewed physiotherapists stated not being initially invited to be part of the COVID-19 teams.

'…initially we were not invited… it is actually the physiotherapist that will have to go and be telling them…like an advocacy…Even the presidential taskforce, does not even have physiotherapy…'(P1).

They were motivated by the desire to publicise the important role of physiotherapy in the successful management of COVID-19 as well as the competence and skills of physiotherapists.

'to my knowledge, I was the only physiotherapist in the frontline in the country as at that time. …they saw the consequences of my action…they are now more well informed than they used to be...when the coordinator of the isolation centre is talking…he usually makes reference

to…physio, there was no time he's giving a progress report that he doesn't make reference to physiotherapy' (P2).

The efforts yielded some positive outcomes with reports of increasing people within the health system having information about the role of physiotherapy in COVID-19 management.

'…the national vice president had written to the NCDC, WHO…because I remember there was a circular from the ministry of health requesting for the training of health professionals, and they requested for physiotherapists…In this way, I think they are getting to know. The national body has also submitted our own guidelines...' (P1).

Half of the frontline physiotherapists appeared unfazed by their initial lack of recognition by other members of the COVID-19 teams, and believed that other health professionals, particularly medical doctors and nurses, would acknowledge the importance of physiotherapy when they observed the positive clinical effects of their actions on COVID-19 patients. These physiotherapists expressed confidence in the uniqueness of their knowledge and clinical expertise.

'…I just usually do not feel bad because I know what I know and I know nobody that is not a physiotherapist knows what I know and cannot do what I do. It was going to be a matter of them appraising their actions before me coming… I acted, I acted, and they saw the result of my actions. They saw the result of my actions, it gave me that feeling of satisfaction, that feeling of "yes, I'm the boss", this field I know it better… I was going to represent not just myself but the profession. I was going in to make a statement, but for me how best to make a statement than your action and the result of your action? I never felt threatened' (P2).

The breaking point: finally exiting the team

All the interviewed physiotherapists were disappointed that despite their increased advocacy about physiotherapy, and perceived competence in discharging their clinical duties, their recognition and respect within COVID-19 teams in Nigeria remained very poor. They believed that this was associated with the teams being clinically and administratively led by medical doctors.

'…We made our clinical presentation about patient management and how we are supposed to be an integral part of the team. We made some recommendations. Then, we met the head of the infectious unit team outside, he told us point-blank that there is no provision for us…' (P7).

'…So many things happened…that suggest we were not recognised. They [doctors] did not see us as important. Why? Because it was the doctors that were coordinating everything. When they were demanding for the names of those that should be paid, they requested forty names from the hospital. The coordinator who is a consultant [physician] decided to put the names of all the doctors and left out other health workers including physiotherapists, not even one of them…' (P8).

This led to three of the interviewed physiotherapists not wanting to remain part of the COVID-19 team after the first COVID-19 wave in Nigeria. They refused to re-join the teams when the second wave started in Nigeria.

'…I was so discouraged that I did not want to be part of the team again. So, when the second wave started…I said I was not going back…'(P7).

2. <u>Problems with multidisciplinary teamwork</u>

All the interviewed physiotherapists expected a multidisciplinary approach to COVID-19 treatment in Nigeria which recognised the role of each professional group, providing equal opportunities for health professionals to bring on their expertise.

> *'…a multidisciplinary team in which everyone will work together as one without anyone thinking others are inferior…' (P6).*

However, the frontline physiotherapists felt that this was deliberately not observed by the medical COVID-19 team leads in the government hospitals.

> *'…they see a condition that should be referred to "A" they hold it because they have grudges with "A". When they see a condition that should be referred to "C" they don't refer it because they want to take all the glory...whereas nobody is an island, so why not do your part and refer to the next person…(P3).*

Lack of teamwork in the ICU and COVID wards of government hospitals

Multidisciplinary teamwork was reported as suboptimal in the government owned COVID-19 treatment and isolation centres and the government hospitals. All the interviewed frontline physiotherapists viewed the nurses as complementary and supportive of physiotherapy roles, although this appeared to be sometimes hampered by poor infrastructure such as irregular electricity supply that impacted on the use of suctioning machines.

> *'…Times when I needed to turn the patient and the patient was bigger than me, if I don't get the porter, I could get the ICU nurse to help me out…' (P5).*

> *'…most of the time suctioning is done by nurses in the wards…we may need the patient to be suctioned during treatment. They do that for us. The only problem will be if there is no light and there is no manual suctioning machine…(P1).*

In contrast, the physiotherapists reported that most of the frontline doctors viewed other health professionals including physiotherapists as inferior, disregarding them as team members.

'…so the nurse was like…what you did today, I was in awe... The doctor that was on duty was like "don't do that, don't do that, he will asphyxiate…' (P3).

Consequently, they believed that this led to doctors taking over the role of some multidisciplinary team members in the government hospitals.

'…it is the house officers [medical interns] that do the nurse's job…' (P8).

'…the nurses doubled as record officers. I did not actually see them work in the ward…(P7).

In contrast, multidisciplinary teamwork was perceived as adequate by frontline physiotherapists in the private COVID-19 treatment and isolation centres.

'…we had a very strong teamwork and team spirit, so it was really easy...' (P5).

Discrimination of physiotherapists within COVID-19 teams

The six physiotherapists working in the government-owned COVID-19 health facilities felt that they were treated and regarded less favourably than other health professionals in the COVID-19 teams by the medical team leads.

They perceived that this manifested as lack of remuneration, protective equipment, and accommodation.

'…the doctors are paid, and the physiotherapists are not being paid…' (P6).

'…Doctors are provided accommodation, we are not…'(P7).

Three frontline physiotherapists reported not being informed, tested for COVID-19, or supported in any way when they were exposed to the virus in contrast to their medical colleagues. They believed that their discriminatory experiences were due to interprofessional rivalry.

'…interprofessional rivalry in our clime here…there is nothing the medical doctor will do without having a nurse ... They look at others as competing with them…' (P1).

Three frontline physiotherapists working primarily in the ICU and COVID wards of government hospitals and one frontline physiotherapist working in a private COVID isolation/treatment centre reported attempts to either completely remove physiotherapists from the COVID-19 teams by the government COVID-19 taskforce led by medical doctors, or to side-line physiotherapists by assigning their roles to other health professionals by the hospital medical team leads. Three physiotherapists reported feeling 'alone' and being the lone physiotherapist within their teams in contrast to other professionals. They described relying on their knowledge of medical presentations and clinical expertise to feel comfortable relating with the other health professionals.

'…I felt like a loner because I was the only physiotherapist. Nobody could really relate with me. I couldn't relate with most people. But because of the vast knowledge of my training, in my pre-clinicals we did everything that medical doctors would do…did. So, I could relate with the medical presentations better…' (P3).

Over half of the physiotherapists reported no longer seeking validation from the medical teams after learning to be contented with patients' appreciation of their positive clinical impact.

'…so I wasn't really seeking...the validation from them [medical team leads]…' (P4).

'…I am not here to impress anybody but to make my patient better...' (P6).

Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres

In contrast to the experience of frontline physiotherapists engaged in government hospitals, the two physiotherapists in the private COVID centres felt accepted and recognised by the other team members. This was particularly by the medical team leads, after they had understood physiotherapy roles in COVID-19 management. The physiotherapists greatly appreciated this, and this seemed to encourage and motivate them.

> *'…the medical colleagues … they are a wonderful set of people… they were just treating me like a King... that acceptance from them…gave me the psychological balance to focus on what I wanted to do...' (P3).*

They regarded their acceptance by the medical team leads as more important than the provision of physiotherapy equipment which was often lacking. These two physiotherapists also reported no discrimination in terms of remuneration, provision of accommodation and other services provided to other members of the COVID-19 team.

> *'…we were paid well…and they foot all the bills' (P3).*

> *'…they provided accommodation to us and the other team members…' (P5).*

3. <u>Broad ranging impact on physiotherapists' personal and professional lives</u>

Stigmatisation that is wide ranging

All the physiotherapists reported being stigmatised by physiotherapy colleagues who were not involved in the frontline management of COVID-19 patients, other health professional colleagues, extended family members, friends, acquaintances, or the general public for fear of contracting the virus from them.

'Some people find it offensive when I try to say hi to them from a distance because I am involved with treating COVID-19 patients…(P7).

'I had been hearing about stigma... I didn't really know the impact in the lives of people until I was a front liner you know (sighs). I didn't tell anybody at home, I only told 2 of my siblings, and one of them is a step sibling and he went ahead to mention it errr...in a very demeaning way that err...I should not be allowed to do certain things that I actually wanted to do errrr... I can't go into the details of that because they are my personal life...the stigmatization really got to me for some days and I was like, is it a crime to actually be a health professional that is working to actually salvage his generation…? I think they just took advantage of the information I actually put at his door step and used it against me so I got to know that yes stigma could be a very difficult thing for COVID-19 patients themselves to deal with, so that made me actually know that if somebody is actually positive if he doesn't want to communicate about it I can really relate with him because it is quite difficult what people can do with stigmatisation…' (P3).

Two of the physiotherapists who were stigmatised by extended family members, found succour with some of their physiotherapy colleagues and friends.

'…my colleague spoke with me; my friends just encouraged me...she really helped me… I should not put my mind there... I'm doing something very honourable and venerable so I should not allow anybody to get to my head…' (P3).

Friends were the source of stigmatisation for two of the physiotherapists.

'I mentioned it to my friend, since then my friend ran away from me because I was working in the isolation centre…' (P8).

All the physiotherapists were stigmatised by the public.

'…But another challenge we had to deal with was the thought of coming out of the centre, because the centre was located on the island. Even after you finished the work for the day and you clean up... once you step out of the centre, people see that you are coming out of the centre…everybody wants to avoid you...' (P5).

Stigmatisation was reported as the greatest challenge by one of the physiotherapists, and she desired external support. For another physiotherapist, stigmatisation by the general public was through social media (Twitter and Facebook). He had gone public about his infection with the virus in a bid to make Nigerians understand the reality of COVID-19 and reduce the conspiracy theories regarding COVID-19 in Nigeria. He was rather treated with suspicion by the Nigerian public who thought that he was being used by the government. The physiotherapist was consequently concerned about the possible impact of this on his family members.

'…people said that the government paid me money…Then I worried about my parents…my siblings...' (P4).

He therefore avoided informing his family about his involvement and had to rely on the acceptance and support from professional colleagues and religious associates. Consequently, most of the frontline physiotherapists avoided informing family members and friends about their involvement in the frontline. Three of the physiotherapists reported relying on their immediate nuclear family as their only source of support. Physiotherapy colleagues were the source of stigmatisation for two of the frontline physiotherapists, which they found difficult, as they were also dealing with discrimination within COVID-19 multidisciplinary teams.

'…they did not provide us accommodation like the doctors and others…so when we get to the department, we were being treated like foreigners, because everybody started avoiding us…' (P7).

Fear, anger and having 'off days'

All the physiotherapists gained confidence with a clearer understanding of their roles in COVID-19 management. Their initial fear about the uncertainty surrounding COVID-19 was no longer present.

'… Now, the fear, has been replaced with a sense of purpose…' (P7).

All the interviewed frontline physiotherapists were afraid of getting infected with COVID-19 or dying from it in the frontline.

'…I mean I got COVID so… I was a bit scared…like…what's going to happen, am I gonna die? (P4).

One of the physiotherapists was not afraid of death as he assessed his risk as very low, although he also sought spiritual sustenance.

'…I prayed about it and then, I allowed God to take control…' (P6).

Two of the physiotherapists had their fear reinforced through communication with or infection of other COVID-19 team members. They attempted to reduce this fear by taking steps to minimise the severity of a potential disease or by convincing themselves that the benefits of their involvement were worth the risk. For two of the physiotherapists, the fear of getting infected was paralysing, and they

described having 'off days' in relation to this, when they felt like being alone, and not being involved in activities they usually enjoyed.

'…I was feeling scared, …really really scary, and I was really really down…' (P2).

They described critically analysing their risk of exposure and infection during such 'off days'. Recovery from this debilitating fear was facilitated by convincing themselves that they were unlikely to have been exposed and infected or feeling that they were unlikely to experience a severe disease even when infected or remembering their patients with COVID-19 who were relying on them for survival.

'…those that died … are those having comorbidities, … I didn't think I fit into that category…' (P2).

'…the thought of the patients looking up to me made me want to get up…' (P3).

One of the physiotherapists reported becoming angry at getting infected with the virus whilst working in the frontline. He blamed himself and regretted exposing himself and his family members to the virus in a health system that did not even acknowledge or appreciate his role as a physiotherapist.

'I was angry because I got it because I volunteered. In the western world, when volunteers go to an active environment, they are well protected. Coming into an environment where you are not even acknowledged…' (P7).

All the physiotherapists felt that exposure to the virus and infection of some of their colleagues was due to inadequate provision of personal protective equipment (PPE), and lack of support from both the health system and the government.

The fear of infecting beloved family members had severe impact on physiotherapists' personal lives and mental health. Family interaction and relationship became adversely affected as they stopped or minimised contact with their close family members in an attempt to protect them.

'…I would just get home and lock myself in the room… because of the fear…' (P5).

'…my wife, …was pregnant, so we had to keep distance…' (P8).

All the frontline physiotherapists were also dreading the possibility of losing their patients to complications of COVID-19.

'…Scary in terms of those in the ICU, on oxygen, with an SPO2 of below 80, nobody wants a patient to die in his hands…' (P2).

'…as I am treating the patient, I will be like arrrh, this patient might not do well…(P6).

Feelings of severe loss

All the frontline physiotherapists expressed feelings of severe loss in terms of prolonged use of uncomfortable and restrictive clothing; little or no physical contact or support from family and friends; diminished social circle from reduced religious and other social activities; reduced physical activity; adverse economic outcomes from loss of income from private practice; increased transportation costs; and their patients dying of COVID-19 complications.

'…having to wear a facemask every day, …the back of my ears… are beginning to hurt (P4).

'…We have to protect ourselves with all these uncomfortable stuffs…' (P8).

'…limited my movement… Visiting friends has drastically reduced… churches were even locked up…' (P1).

'I had to avoid everybody, I had to avoid my wife, I had to avoid my kids, I had to be locked up…' (P7).

'…we were accommodated …so I had to change my environment totally, I changed my friends, I changed everything...' (P3).

'…affected my work… I'm a private practitioner and patients were not coming (P3).

'…but when the pandemic came …the cash flow was going down. There was financial strain… The financial impact affected me personally' (P7).

'…before, I could easily use a public transport…now I have to use Uber so it's even more costly…' (P5).

4. <u>Lack of support for perceived physiotherapy roles from prevention through to rehabilitation</u>

All the frontline physiotherapists believed they were supposed to be involved in preventive efforts, therapeutic strategies, and long/short-term rehabilitation. Preventive efforts entailed primary prevention of infection and secondary prevention of severe disease. The frontline physiotherapists emphasized increasing physical fitness and reducing deconditioning from COVID-19 lockdowns.

All but one of the frontline physiotherapists were not cardiopulmonary physiotherapists and they reported also fulfilling these roles.

'*We all had to adapt as respiratory physiotherapists…' (P7).*

This could be because many cardiopulmonary physiotherapists were not recommended to the frontline by their departments.

'…the department [physiotherapy] started choosing those who will go first … I realised that I wasn't among those who were going…' (P6).

Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria

All the interviewed physiotherapists reported not being optimally involved in the therapeutic stages of COVID-19 management. They also did not view themselves as adequately involved in preventive efforts and in the rehabilitation and long-term management of the complications from the disease.

'they have…post infection symptoms, a lot of them require physiotherapy…but we don't see them' (P1).

'On your own': lack of material and psychological support

All but two frontline physiotherapists felt unsupported by the health system and the government. They interpreted the lack of provision of PPE, lack of sanitation facilities, lack of remuneration and allowances, and lack of health and life insurance in the case of infection, severe disease, and death, as very discouraging.

'…… we don't feel confident that if you get infected that you are not on your own…' (P1).

'…we don't have equipment, we don't have good funding, remuneration is zero…' (P2).

'*The PPEs were not the best quality, … I had no help; I had no support…I was not even paid…' (P7).*

Physiotherapists' reliance on self-support and support of one another

All six frontline physiotherapists in the government facilities reported learning to manage their expectations and depend only on themselves and fellow frontline physiotherapists. More senior physiotherapists were supporting and guiding the younger ones.

> *'…and you call them [junior physiotherapists] before they start their work. …how was your night? Ask about their health. … And then try to explain to them what happened the previous day. If they have some cases that they think they [junior physiotherapists] need special information about, we [senior physiotherapists] try to do that for them…' (P1).*

Discussion

Statement of principal findings

The study explored the experiences of physiotherapists managing COVID-19 patients in the frontline in Nigeria. Results highlighted the physiotherapists' desire to be included in the COVID-19 teams in Nigeria seemed to be predominantly driven by their personal agencies, sense of professionalism, previous experience managing highly infectious diseases, or being a cardiopulmonary physiotherapist. The frontline physiotherapists, particularly those in the government hospitals in Nigeria, felt that the road to becoming members of the COVID-19 team was arduous and came about through their own sustained advocacy. Even so, some of them exited the team, and were no longer involved in the frontline out of frustration. This was because they could no longer cope with the perceived psychological, emotional, and financial impact of feeling discriminated against.

Interpretation within the context of the wider literature

In contrast to the findings of this current study, the availability or lack thereof of PPE and COVID-19 allowances were reported as a general problem affecting health workers in other studies in Nigeria [26,27], and China [7,8] which did not include physiotherapists. Inadequate provision of PPE appeared to be affecting all health care professionals equally in studies that included physiotherapists in the UK and

Spain [10,11]. The lack of PPE was reported as a global problem affecting all world regions, especially lower income countries, and this contributed to the high burden of infections and deaths among healthcare workers[28].

Discriminatory experiences reported by the frontline physiotherapists in relation to managing COVID-19 patients as frontline healthcare workers is a novel finding in this study and has not been reported by other studies of COVID-19 patients. This finding aligns with a general lack of recognition of the role, scope and autonomy of physiotherapy by individuals, healthcare professionals especially physicians, government and the society globally, although this might be worse in low income settings[29–32]. The frontline physiotherapists felt that they were not regarded as legitimate frontline members of the COVID-19 teams in Nigeria. The frontline physiotherapists in government hospitals expressed discrimination in relation to lack of remuneration, inadequate provision of PPE and accommodation plus little or no professional recognition by medical team leads. In contrast, the frontline physiotherapists in the private COVID isolation and treatment centres in Nigeria reported being recognised, respected, and supported by their medical team leads and other healthcare professionals in their teams. There were no reports of any form of discrimination from qualitative studies of physiotherapists who were practising in the United Kingdom and Spain[10,11]. Discrimination of physiotherapists as frontline healthcare workers in the COVID-19 pandemic in Nigeria may be associated with the interprofessional rivalry rampant in the Nigerian health sector [33–37]. The perceived or actual discrimination of other healthcare professionals by some medical team leads in Nigeria might hamper professional autonomy, professional identity, professional expertise and interprofessional harmony. Another reason for the discrimination of physiotherapists as frontline healthcare workers, particularly in the hospitals, could be because the COVID-19 teams in these facilities were led by infectious disease medical experts. These specialists may have had little or no clinical interaction with physiotherapists in the hospitals prior to the COVID-19 pandemic probably due to their limited involvement in acute care settings in Nigeria. It is therefore not surprising that the frontline physiotherapists felt that their roles in health promotion, disease prevention, treatment, and

rehabilitation in relation to the pandemic were not adequately recognised and utilised. This might have adverse implications for patients with COVID-19 in Nigeria.

The lack of multidisciplinary teamwork and the perceived discrimination of physiotherapists in the frontline by the team leads might undermine an effective response to the COVID-19 pandemic in Nigeria. Teamwork is required for optimal quality and safety of patients, the well-being of healthcare professionals, and good financial outcomes for healthcare systems[38]. Experts have reported that scarce resources during pandemics can trigger biases against other professionals, with team leads likely to protect only their own group[38]. This can stifle communication between team members, and the coordination of equipment and other materials across professions and organisations that are critical in implementing an effective response to the COVID-19 pandemic[38]. Generally, scarcity of resources were identified as the most frequently experienced ethical issue by physiotherapists globally[39]. It is recommended therefore, that teamwork be characterised by effective coordination of expertise across professional groups. Communication between professional groups should be accurate, timely, cordial and reflective to enhance quality of care, and the financial output of health care institutions[38]. The Nigerian health system need to encourage clinical team leads that acknowledge the diversity of multidisciplinary team members required in effectively and efficiently managing the pandemic. Although hierarchy is a key feature of healthcare systems and fosters coordination, it can also hamper inclusiveness[38]. Inclusive behaviour from team leads can ensure that members from other professional fields can feel psychologically safe to participate and collaborate with multidisciplinary team members. Medical doctors lead the COVID-19 teams in Nigeria. In high income countries, physiotherapists and other healthcare professionals have also successfully led COVID-19 teams. The Nigerian healthcare system needs to adopt a multidisciplinary team orientation with leadership that ensures the individual well-being of all health professionals within COVID-19 teams. This can be a great asset in the current and future infectious disease pandemics in Nigeria.

It was surprising that only one of the interviewed frontline physiotherapists was a cardiopulmonary physiotherapist. Comparison with previous studies is impossible because they did not specify the physiotherapists' specialty areas [10,11]. The only cardiopulmonary physiotherapist in this study reported not being initially put forward to join the COVID-19 team. He reported making personal efforts that made him to be included later. Similarly, one of the cardiopulmonary physiotherapists in the Public Involvement and Engagement consultation group also reported not being invited to join the COVID-19 multidisciplinary team as a frontline physiotherapist. He reported that despite being the only cardiopulmonary physiotherapist in his hospital, his physiotherapy department recommended physiotherapists from other specialty areas to join the COVID-19 team. The reason for this finding is unclear. However, the results of this study suggest that previous experience managing highly infectious diseases may have been the major factor influencing the recommendation from physiotherapy departments. This might explain why the highest number of the frontline physiotherapists were neurological physiotherapists. In contrast, the private COVID-19 centres were reported to have advertised for any available physiotherapists which may have led to none of their recruited frontline physiotherapists being cardiopulmonary physiotherapists. This finding could be related to the few cardiopulmonary physiotherapists currently working in Nigeria [40]. The involvement of mostly non-cardiopulmonary physiotherapists in the management of COVID-19 patients in the frontline in Nigeria might have meant that the frontline physiotherapists did not demonstrate the level of cardiopulmonary expertise that would have been the case for cardiopulmonary physiotherapists. This might partly explain why the medical team leads underestimated the potential role of the frontline physiotherapists in COVID-19 management in Nigeria. However, the frontline physiotherapists reported experiencing discrimination prior to being given any opportunity to demonstrate their expertise. The reported interprofessional rivalry between medical doctors and other healthcare professionals in Nigeria [33–35] may therefore be more important than the level of expertise of frontline physiotherapists in explaining the feelings of discrimination reported by the frontline physiotherapists.

Reports of stigmatisation, fear, anger, feelings of severe loss, and lack of material and psychological support were common findings in other studies[6–9]. Physiotherapists in this study had experiences of stigmatisation from physiotherapy colleagues who were not engaged in the frontline, other health professional colleagues, family members, friends, acquaintances, or the public. In contrast, physiotherapists in other countries did not report stigmatisation from their neighbours, acquaintances and the general public as physiotherapists were usually not perceived as being in regular contact with potentially infectious patients in their routine duties in those countries [10,11]. In Nigeria, the public often do not understand the difference between physiotherapists and medical doctors which might at least partly explain the stigmatisation of frontline physiotherapists by the public. There were no reports of stigmatisation from physiotherapy colleagues, other health professional colleagues, family members and friends in these studies [10,11]. In contrast, physicians and nurses managing COVID-19 patients were stigmatised by the general public in Iran [41].

The fear experienced by frontline physiotherapists in Nigeria were in relation to the novelty of the virus, fear of infection, having severe disease, dying from the disease, or transmitting it to their loved ones. This aligns with findings from physiotherapists in other countries including the United Kingdom [10] and Spain [11], and experiences of other health professionals including physicians and nurses in China [7,8], and Iran [41]. The frontline physiotherapists in Nigeria felt anger in response to getting infected whilst performing a duty for which they perceived they were not acknowledged by the medical team leads and the health system. Anger was experienced by frontline health workers in relation to the perception of abandonment by the government and breaking of lockdown guidelines in the United Kingdom [10]. Frontline physiotherapists in Spain felt anger at the roller coaster of other emotions they were feeling including fear, sadness, illusion, rage, uncertainty, panic, worry, grief, loneliness, and anxiety [11]. Feelings of severe loss expressed in terms of restrictive uncomfortable clothing, loss of physical contact with family and loved ones, loss of spiritual activities, reduced physical activity and loss of income from private practice due to the lockdown align with findings from other studies [6–8,10,11,41]. The complaints about the lack of provision of equipment, lack of emotional and psychological

support in the government hospitals, and feelings of abandonment reported by the frontline physiotherapists in Nigeria have been felt elsewhere [10].

Strengths and limitations

One of the strengths of this study is its novelty. This is the first study of physiotherapists managing patients with COVID-19 in the frontline in Nigeria. It is one of the very few studies globally that have explored the experiences of physiotherapists as COVID-19 frontline healthcare workers. Another strength of this study is that it was mainly conducted by local researchers with roots in the healthcare system. Furthermore, this study was made robust by the active participation of a Public Involvement and Engagement consultation group in the interpretation of results. Despite the strengths of this study, it had limitations. Data saturation could not be established due to the limited number of physiotherapists engaged in the frontline management of COVID-19 in Nigeria. Only eight of these physiotherapists consented to participate from the pool of about 20 physiotherapists engaged in managing COVID-19 patients in the frontline in Nigeria at the time of this study. Twenty physiotherapists engaged as frontline COVID-19 health workers in a country of over 200 million people may highlight an underutilisation of physiotherapists in Nigeria. Considering the very few numbers of physiotherapists in Nigeria overall (as detailed in the methods section), and in the frontline, the number of participants in this study appears realistic and reflects the Nigerian 'reality'. Another potential limitation is that telephone interviews can prevent the recognition of non-verbal signals which might have influenced the interpretation of findings. However, available evidence suggests that there is no obvious difference between telephone and face to face interviews[21]. Telephone interviews have the added advantage that they allow safe data collection during a highly infectious disease pandemic and also afford some participants a greater freedom to discuss potentially difficult topics without having a sense of loss of confidentiality[21].

Implications for policy, practice, and research

Increased advocacy for the involvement of physiotherapy (particularly cardiopulmonary physiotherapy) is required in Nigeria. Public awareness regarding physiotherapy needs to be intensified with physiotherapy associations in Nigeria having a significant role to play. This advocacy can be through mass media campaigns and community outreaches to educate the public, other healthcare professionals, and the Nigerian government about the areas and scope of physiotherapy. It is particularly important to provide enlightenment regarding the roles of cardiopulmonary physiotherapy and other fields of physiotherapy in the management of patients with COVID-19. As some medical specialists appeared to have had little or no clinical interaction with physiotherapists in the hospitals prior to the COVID-19 pandemic, interprofessional education needs to be instituted at Nigerian medical schools at the undergraduate and postgraduate levels. This can foster interprofessional respect and collaborative practice for patient-centred care. Frontline physiotherapists involved in managing COVID-19 patients in Nigeria need to be better supported materially and psychologically by medical administrators, medical team leads, and the Nigerian government. However, physiotherapists in Nigeria may need to increase their capacity within the field of COVID-19 specifically, and within the area of cardiopulmonary practice generally. Healthcare policies in Nigeria need to promote the dignity of all health professions, rather than the superiority of one health profession to curb the pervasive interprofessional rivalry in the Nigerian health system. Nigeria needs a more inclusive healthcare system with team leads that respect and engage other frontline healthcare professionals for the effective management of the current pandemic and in preparation for future pandemics. Useful approaches for physiotherapy advocacy have been suggested. These include formation of physiotherapy task force for the quick improvement of the skills and knowledge of physiotherapists where necessary, active involvement of physiotherapists in the hospital triage, routine involvement of physiotherapists alongside medical and nursing staff in the management of patients with respiratory failure following viral infection[5]. Other approaches include multistakeholder engagement and support in strengthening rehabilitation. This can be through

international organisations partnering with local organisations and initiatives, as well as with the country's government[29].

Conclusions

Physiotherapists managing COVID-19 patients in the frontline in Nigeria felt that they were not regarded as legitimate members of the COVID-19 multidisciplinary teams by the medical team leads and the health system. Their experiences of discrimination were made worse by experiences of stigmatisation from extended family members, colleagues, and the public, coupled with perceived material and psychological losses due to the COVID-19 pandemic.

Declarations

Contributorship: CNI-C conceived and designed the study. CNI-C collected the data. CNI-C analysed and interpreted the data, supported by CA, AA, EA and RG. CNI-C drafted the initial manuscript supported by RG. All authors contributed to a revised edition of the manuscript and CNI-C prepared the final manuscript.

Ethics and other permissions: Ethical approval was obtained from the University of Nigeria Teaching Hospital (NHREC/05/01/2008B-FWA00002458-1RB00002323-July 2020). Written information about the objectives of the study was emailed to eligible participants who indicated interest in participating. A written and verbal consent was obtained prior to interviewing.

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Competing interests: No known conflict of interests.

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Appendix 1: interview schedule

1. Demographic information

Age

Gender

Education

Specialisation

Years of practice

2. Could you tell me about becoming a physiotherapist?

3. What do you like most about being a physiotherapist?

4. Could you tell me what led to you becoming involved in caring for patients with COVID-19?

5. Could you tell me about the activities you undertake in working with patients with COVID-19?

   Probe for knowledge; skills; social/professional role and identity; beliefs about capabilities; beliefs about consequences; environmental factors.

6. What do you think about the way COVID-19 is being managed in your health facility?

   Prompts: What are the expectations on you managing COVID-19? What are the facilitators or barriers to your treatment of COVID-19?

7. How has it been for you since COVID-19 started in Nigeria?

   Prompts: What are the differences between work before the pandemic and during the pandemic? What are the changes and challenges in your work since COVID-19?

8. What is it like for you to care for COVID-19 patients?

Prompts: How does it make you feel? What were your feelings before the pandemic, during the first day of COVID-19 treatment and currently?

9. How have you coped with the changes and challenges in your work since COVID-19?

   Prompt: Has anything helped or made things more difficult? What is the available support and what support do you still need?

10. Can you tell me a bit about the relationship between your work and personal life?

    Prompts: What was it like before COVID-19? What is it like now?

11. Is there anything else you want to tell me that I haven't given you the chance to talk about? Probe for insights they may have had from this pandemic.

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1/1-3
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	1-2/6-35
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	2-3/37-68
Purpose or research question - Purpose of the study and specific objectives or questions	3/69-71
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	3-7/86-166
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	3-4/73-77
Context - Setting/site and salient contextual factors; rationale**	4/90-93
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	4-6/94-132
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	26/669-672
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	6/133-144

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	6, supplementary file 1/133-144, supplementary file 1
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	7/168-175
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	6-7/146-166
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	6-7/145-166
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	7/152-161

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-20/179-523
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	7-20/184-527

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	21-26/529-663
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Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	26/675
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	26/673-674

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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Experiences of physiotherapists involved in frontline management of patients with COVID-19 in Nigeria: a qualitative study

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Running head: Frontline physiotherapists managing COVID-19 in Nigeria

Abstract

Objectives

Evidence-based guidelines recommend physiotherapy for respiratory treatment and physical rehabilitation of patients with COVID-19. It is unclear to what extent physiotherapy services are utilised in the frontline management of COVID-19 in Nigeria. This study aimed to explore the experiences of frontline physiotherapists managing patients with COVID-19 in Nigeria.

Design

Qualitative interview-based study.

Setting

ICU and hospital COVID wards, COVID-isolation and treatment centres in Nigeria, between August 2020 and January 2021.

Participants

Eight out of 20 physiotherapists managing patients with COVID-19 in the frontline were recruited using purposive and snowball sampling.

Methods

Qualitative in-depth semi-structured telephone interviews of all consenting physiotherapists managing patients with COVID-19 in the frontline in Nigeria were conducted and transcribed verbatim. Transcripts were thematically analysed.

Results

Eight frontline physiotherapists (three neurological physiotherapists, two orthopaedic physiotherapists, one cardiopulmonary physiotherapist, one sports physiotherapist and one rotational physiotherapist) provided consent and data for this study. Four themes and thirteen subthemes were generated illustrating discriminatory experiences of frontline physiotherapists, particularly from COVID-19 team leads; lack of multidisciplinary teamwork within COVID-19 teams; wide ranging stigmatisation from extended family members, colleagues, friends, and the general public; material and psychosocial personal losses; lack of system support; and suboptimal utilisation of physiotherapy in the management of COVID-19 in Nigeria. Personal agency, sense of

professionalism, previous experience managing highly infectious diseases, and being a cardiopulmonary physiotherapist were the factors that made the frontline physiotherapists to become involved in managing patients with COVID-19. However, discriminatory experiences made some of these physiotherapists to stop being involved in the management of patients with COVID-19 in the frontline. Most frontline physiotherapists were not cardiopulmonary physiotherapists which may have influenced their level of expertise, multidisciplinary involvement, and patient outcomes.

Conclusions
There is suboptimal involvement and support for physiotherapists, particularly cardiopulmonary physiotherapists treating patients with COVID-19 in the frontline in Nigeria.

Keywords
Physiotherapists, Physical Therapists, COVID-19, Qualitative research, Nigeria, Africa

Strengths and limitations of this study

- All consenting physiotherapists managing patients with COVID-19 in the frontline in Nigeria were interviewed.
- A Public Involvement and Engagement consultation group informed the interpretation of results.
- Telephone interviews preclude the identification of non-verbal cues which might have influenced the interpretation of findings.
- Data saturation could not be established with eight frontline physiotherapists.
- The few frontline physiotherapists involved in this study (eight) reflects the very few physiotherapists overall (about 20) engaged to serve in the frontline during the pandemic in Nigeria.

Introduction

Physiotherapy is recommended in the respiratory treatment and physical rehabilitation of patients with COVID-19 [1]. Physiotherapy may be indicated in the cases of patients with COVID-19 who present with productive cough and are unable to clear secretions independently. High-risk patients are those with existing comorbidities associated with hypersecretion or ineffective cough (e.g., neuromuscular disease, respiratory disease, and cystic fibrosis), and they require physiotherapy. Physiotherapy is indicated for ventilated patients who show signs of inadequate airway clearance requiring airway clearance techniques. Patients with severe respiratory failure associated with COVID-19 may require prone position to optimise oxygenation, and this should be overseen by the physiotherapist. Patients with ICU-acquired weakness due to prolonged protective lung ventilation, sedation and use of neuromuscular blocking agents require initiation of early rehabilitation by the physiotherapist after the acute phase of respiratory distress [1,2].

Psychological distress is known to accompany infectious disease pandemics. This was present during the first severe acute respiratory syndrome (SARS) outbreak of 2002-2004. Up to 75% of healthcare workers in Toronto (Canada) experienced emotional distress, and 75% of healthcare workers in Taiwan and 21% of healthcare workers in Singapore, experienced psychiatric morbidity. Fear of contagion, feelings of stigmatization, loneliness, boredom, anger, anxiety, and a sense of uncertainty were commonly reported amongst healthcare workers[3]. A systematic review of quantitative studies on the impact of the current SARS Coronavirus 2 (SARS-CoV-2) pandemic on the mental health of healthcare workers in hospital settings found a high burden of mental health problems. These included depression (13.5%-44.7%), anxiety (12.3%-35.6%), acute stress reaction (5.2%-32.9%), post-traumatic stress disorder (7.4% 37.4%), insomnia (33.8%-36.1%), and occupational burnout (3.1%-43.0%). Both frontline healthcare workers and other healthcare workers with low social support had the worst psychological outcomes[4]. Italian physiotherapists were shown to be afraid of their families and colleagues getting infected with the SARS-CoV-2 virus, which aggravated stress and anxiety, which

were ameliorated by messages of solidarity nationally and from around the world through provision of support and resources. Adequate preventive measures to protect patients, physiotherapists and other health professionals from infection, availability of remote working facilities such as smart-working, telemedicine systems, and adequate funding for services were some of the support and resources provided[5].

Limited qualitative studies have explored the experiences of frontline physiotherapists managing patients with COVID-19 globally. Most qualitative studies have explored the experiences of physicians and nurses in China and Europe [6–9]. More recent qualitative studies have included physiotherapists among other health professionals in the United Kingdom [10] or involved only physiotherapists in Spain [11]. Traumatising and shocking experiences, limited material resources, feelings of a sense of duty despite significant personal risks, challenges managing a novel condition, resilience despite working challenges, and the need for support were common findings across these studies.

No qualitative study of physiotherapists involved in COVID-19 management in the frontline existed in Nigeria at the time of this study, a gap that this study aimed to fill. This is relevant as respiratory physiotherapy procedures may be aerosol generating, with important implications during this pandemic [1,2]. This is more so in Nigeria where physiotherapists do not routinely have infectious disease expertise. Furthermore, due to the nature of the pandemic, and limited resources in Nigeria, frontline physiotherapists in Nigeria may need material and psychological support. It is known that enhancing the psychological wellbeing of health care workers can enhance vigilance and the fight against emerging infectious diseases[3]. Providing material and psychological support to frontline physiotherapists can promote their health and safety which may be central for safe, effective and efficient patient management [7]. In addition, frontline physiotherapists' experiences of managing patients with COVID-19 in Nigeria may inform evidence-based public health policy, and clinical guidelines. The findings from this study can also guide the quality and direction of support provided to physiotherapists to ensure that they are effective in performing their duties. Finally, the results

from this study can facilitate multidisciplinary teamwork in managing the pandemic which can positively influence COVID-19 outcomes in Nigeria. It has been recommended that the treatment of COVID-19 be performed by the efforts of a multidisciplinary team. Team members need to have the same goal of ensuring that patients have improved signs and symptoms and can continue their daily activities independently. These goals can be achieved through efficient communication and collaboration amongst team members. Multidisciplinary efforts are vital in reducing the impact of the acute period of the disease, and treating, rehabilitating and reintegrating people after COVID-19[5,12]. Unfortunately, the Nigerian health system is plagued by challenges arising from lack of collaborative practice among healthcare professionals, interprofessional conflict and rivalry[13].

Therefore, the aim of this study was to explore the experiences of physiotherapists managing patients with COVID-19 in the frontline in Nigeria. This study included a Public Involvement and Engagement consultation group to inform the interpretation of results.

Methods

Authors' background

All the authors were academic and/or clinical physiotherapists and included two women and three men. Their areas of specialty included community, cardiopulmonary, paediatric, and orthopaedic physiotherapy. All but one of the authors were working in Nigeria at the time of this study. None of the authors were working as frontline physiotherapists during the COVID-19 pandemic.

Patient and public involvement

A Public Involvement and Engagement consultation group was recruited to inform the interpretation of results. Cardiopulmonary physiotherapists (one from each state) who had been working in acute and critical care settings prior to the COVID-19 pandemic in Nigeria, in the states from which the frontline physiotherapists were recruited were engaged in the later stages of the data analysis to inform the interpretation of results. They provided information on the scope of physiotherapy practice and multidisciplinary functioning and relationships within acute and critical care settings in the states

prior to the COVID-19 pandemic in Nigeria. They described the embedding of physiotherapists in the health care institutions before COVID-19, specifically in the ICU and wards of the hospitals.

Study design

Qualitative in-depth semi-structured individual telephone interviews were conducted. The study was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) [14] and the Standards for Reporting Qualitative Research (SRQR) [15].

Study setting

Nigeria has the largest population in Africa with over 200 million people in 2022. Nigeria has the seventh largest population in the world with 36 states and one federal capital territory. Lagos state currently has the largest population with 15.3 million people whilst Bayelsa state has the smallest population with about 2.7 million people[16]. Despite the large population of Nigeria, there is a shortage of physiotherapists due to unfavourable working conditions that lead to brain drain and the search of greener pastures. Out of about 5,000 physiotherapists licensed to practise in Nigeria, only about 2,000 physiotherapists are currently practising in Nigeria. About 30% of physiotherapists licensed to practice in Nigeria presently practice abroad. The remaining physiotherapists are currently unemployed[17]. The World Physiotherapy website records an even lower number of 790 member physiotherapists currently registered with the Nigeria Society of Physiotherapy[18]. The patient/clinician ratio for physiotherapy in Nigeria is very poor with about 0.047 physiotherapists per 1,000 of the population[19].

Attempts were therefore made to recruit all frontline physiotherapists managing patients with COVID-19 in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in all the states in Nigeria and the federal capital territory.

Sample size

Saturation is an ideal methodological principle in qualitative research which often indicates that further data collection and/or analysis of qualitative data is no longer necessary. It is widely regarded

as the gold standard for determining adequate sample sizes in qualitative studies. However, there are several and often contradicting conceptualisation of saturation in qualitative research. For instance, data saturation is believed to occur when further qualitative data does not produce new information. Thematic saturation is reached when no new themes are identified from subsequent data. Theoretical saturation is reached when the entire constructs that make up a theory are already characterised in the collected data. Data saturation is reportedly emphasized during qualitative data collection; thematic saturation is seen as important during data analysis; and theoretical saturation is underscored during sampling[20]. We had aimed at recruiting an adequate number of physiotherapists to ensure that data saturation was reached. However, it was discovered during the field work, that only about 20 physiotherapists were involved in the frontline management of COVID-19 in Nigeria at the time of data collection. We therefore decided to take a pragmatic approach, envisaging that recruiting about half of that number would be a realistic expectation. Considering the very small targeted population, we took steps to achieve a sufficient depth and breadth of an understanding of the experiences of the consenting frontline physiotherapists, rather than reaching a state of 'completeness' of data[20] as implied in a more traditional meaning of data saturation.

Participant recruitment

There were only a few physiotherapists managing patients with COVID-19 as frontline practitioners (ICU and COVID wards in hospitals, COVID isolation and treatment centres) in a few states in Nigeria. Therefore, this study attempted to recruit all consenting frontline physiotherapists involved in managing patients with COVID-19 in government and private health facilities in Nigeria through purposive and snowball sampling. The physiotherapists were recruited through the national associations and physiotherapy professional groups in Nigeria including the Association of Clinical and Academic Physiotherapists of Nigeria (ACAPN), and the Nigeria Society of Physiotherapy (NSP). Invitation to participate in the study was also circulated through the social media platforms of physiotherapists practising in Nigeria. The eligibility criteria for inclusion in the study and the contact

details of the lead author were included in the invitation letter. Instructions on how physiotherapists interested in participating in the study can contact the lead author were also documented. Interested participants who contacted the lead author were then provided a written information sheet about the study via email. The contact details of the interested participants were collected with which their eligibility was determined. Eligible physiotherapists were those redeployed to specifically manage patients with COVID-19 in the frontline in the ICU and COVID wards in hospitals, and COVID-isolation and treatment centres in any of the states in Nigeria. Physiotherapists who had only treated patients who had coincidentally tested positive for the corona virus or patients who developed the COVID-19 illness during their routine physiotherapy treatment for another health condition were not eligible. Eligible physiotherapists were contacted to identify a convenient day and time for the telephone interviews. Written and verbal informed consent were obtained prior to the interviews.

Procedure for data collection

All interviews were conducted over the telephone, in English and audio recorded by the lead author between August 2020 and January 2021. A semi-structured interview guide (Appendix 1) collected sociodemographic characteristics and explored participants' experiences of managing patients with COVID-19 as frontline health workers in health facilities in Nigeria. The questions were informed by the objective of this study, and published literature on the experiences of frontline health workers managing patients with COVID-19 around the world. The final set of questions were discussed and subsequently agreed by the study team. The interview guide was flexible allowing for detailed exploration of experiences. The interviewer (lead author) engaged each participant in a dialogue such that initial questions were modified in line with the content of participant's responses. The interviewer then probed interesting and significant perceptions that appeared, giving each participant the maximum opportunity to tell their own story [21,22].

Data management and analysis

Data collection was completed and anonymised before data analysis. Interviews were transcribed verbatim in English [23] [CNI-C transcribed 2 transcripts; CA transcribed 3 transcripts; AA transcribed 2 transcripts; EA transcribed 1 transcript]. CNI-C then applied thematic analysis to the data using the qualitative data analysis software – Taguette (version 0.10.1) [24]. The following six steps of thematic analysis were undertaken: familiarisation with data, generating initial codes, searching for themes, reviewing potential themes, defining and naming themes, and producing the report [23]. For the first stage, CNI-C conducted all interviews. CNI-C, CA, AA, and EA listened to all audio files. CNI-C transcribed the interviews and read and reread the transcripts. These increased familiarisation and immersion in the data. An inductive approach to coding data was used[25]. The lead author performed the initial coding of the whole data which was then discussed with the entire research team to ensure that the codes were grounded in the data. The initial codes were descriptive and provided the summary of each portion of data. The descriptive codes which had similar or related meanings were then grouped into interpretative or latent codes. These latent codes identified the meanings that lied beneath the descriptive codes linking them together. Themes were then constructed from the descriptive and interpretative codes in an iterative process. Coded data were reviewed for similarity and overlap. Codes which clustered around a similar issue were grouped together in one theme. The relationship between themes and how they combine to produce an overall narrative were explored. The initial themes were reviewed by the study team to ensure that they reflected the original data. Some themes were subsequently left as they were, others were collapsed together or split depending on their coherence and underlying meaning. The resulting themes were then defined, named, and made specific by highlighting the unique meaning of each in line with the research objectives. Finally, the narrative report was produced with nuanced illustrations.

Results

Sociodemographic characteristics of participants

Nine frontline physiotherapists initially indicated interest in participating in the study. One of them subsequently declined participation and did not provide consent and any data. Table 1 presents the sociodemographic characteristics of eight frontline physiotherapists in three states (Enugu, Lagos, and Oyo).

Table 1: Sociodemographic characteristics of the frontline physiotherapists

AGE	Frequency	%
20-29	2	25.0
30-39	2	25.0
40-49	4	50.0
SEX		
Male	7	87.5
Female	1	12.5
EDUCATION		
Bachelor	5	62.5
MSc	2	25.0
MSc & MD Homeopathy	1	12.5
SPECIALISATION AREA		
Neurological physiotherapy	3	37.5
Orthopaedic physiotherapy	2	25.0
Cardiopulmonary physiotherapy	1	12.5
Sports physiotherapy	1	12.5
Rotation/general practice	1	12.5
YEARS OF PRACTICE		
0-4	1	12.5
5-9	3	37.5
10-14	2	25.0
15-19	2	25.0
DESIGNATION		
Deputy Director	1	12.5
Assistant director	3	37.5
Principal physiotherapist	1	12.5
Private practitioner	2	25.0
Intern physiotherapist	1	12.5
COVID-19 FACILITY		
Government hospital	5	62.5
Government owned isolation/treatment centre	1	12.5
Privately owned isolation/treatment centre	2	25.0

*Clinical physiotherapists' cadres in Nigeria: Director – the highest cadre of physiotherapy clinical practice in Nigeria and are usually appointed head of clinical physiotherapy departments. Deputy director – the second to the highest cadre of physiotherapy clinical practice in Nigeria and are usually appointed head of clinical physiotherapy specialty units or heads of clinical physiotherapy departments in the absence of a director of physiotherapy. Assistant director – the next lower rank to the deputy director and are usually specialist physiotherapists as the two more senior cadres and can be appointed heads of clinical physiotherapy specialty areas in the absence of a deputy director. Principal physiotherapist –senior level clinical physiotherapist specialising in a specific physiotherapy specialty area. Senior physiotherapist – first senior level clinical physiotherapy cadre involving rotatory postings through the different physiotherapy specialty areas. Corper physiotherapist – junior clinical physiotherapist undergoing rotatory postings through the different physiotherapy specialty areas and can be regarded as the second year of clinical experience/training post-graduation. Intern physiotherapist – junior clinical

physiotherapist undergoing rotatory postings through the different physiotherapy specialty areas and can be regarded as the first year of clinical experience/training post-graduation.

Themes

Table 2 presents the themes produced from the thematic analysis.

Table 2: Themes depicting the experiences of the frontline physiotherapists

Themes	Becoming and remaining part of the COVID-19 team, or finally exiting the team	Problems with multidisciplinary teamwork	Broad ranging impact on physiotherapists' personal and professional lives	Lack of support for perceived physiotherapy roles from prevention through to rehabilitation
Subthemes	The role of personal agency	Lack of teamwork in the ICU and COVID wards of government hospitals	Stigmatisation that is wide ranging	Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria
	Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist	Discrimination of physiotherapists within COVID-19 teams	*Fear, anger* and having '*off days'*	'*On your own*': lack of material and psychological support
	Sense of professionalism	Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres	Feelings of severe loss	Physiotherapists' reliance on self-support and support of one another
	The breaking point: finally exiting the team			

1. Becoming and remaining part of the COVID-19 team, or finally exiting the team

The role of personal agency

The physiotherapists reported that their desire and efforts in joining the COVID-19 teams was driven by their own personal motivations rather than any external motivation from the health system or the government.

'…it was personal motivation; government did not motivate me in anyway… (P8).

These included the physiotherapists' innate ability to derive joy in improving patients' lives, wanting to 'do unto others as you would have them do unto you', and the love for adventure and challenges, serving mankind and making impact.

'…he [patient] still tells me "thank you for saving my life"…' (P4).

'*I see it as a ministry...not just an occupation. It's something you do to touch lives* (P5).

'Personally, I love challenges…' (P7).

'…I'd always looked for opportunities to serve...'(P3).

'*…I'm offering something to the community* (P6).

The physiotherapists' initial fear regarding the virus became replaced with a sense of purpose as they gained experience and confidence in their roles.

Previous experience managing highly infectious diseases or being a cardiopulmonary physiotherapist

The confidence and desire to be involved in managing patients with COVID-19 appeared to be influenced at least in part by previous experience managing highly infectious and potentially fatal diseases.

'…being in neuromedicine… I've had to attend to patients with HIV…tuberculosis…hepatitis… So…I just brought forward those …knowledge and precautions…' (P1).

The cardiopulmonary physiotherapist also appeared to be highly motivated in becoming and remaining part of the COVID-19 team. This appeared to be due to his perception of his expertise in this field into which the pandemic predominantly falls in. He did not appear to be influenced by lack of remuneration or suboptimal provision of other resources. He regarded many COVID-19 related complications as routine in his day-to-day physiotherapy services.

'……because my area of specialisation is cardio-respiratory… it's like, a calling to me… I decided … whether they pay me or not, I will go and manage patients that have COVID…' (P6).

One of the physiotherapists desired to support patients with COVID-19 in their periods of pain, difficulties, and hopelessness because of her previous first-hand experience of having life-threatening illnesses.

'…I've had series of health conditions myself that got me thinking, will I ever be fine again? So, I've had a first-hand experience of what it feels like to not have hope again. Just stay there and be thinking like…let death just come already…' (P5).

Sense of professionalism

All the interviewed physiotherapists stated not being initially invited to be part of the COVID-19 teams.

'…initially we were not invited… it is actually the physiotherapist that will have to go and be telling them…like an advocacy…Even the presidential taskforce, does not even have physiotherapy…'(P1).

They were motivated by the desire to publicise the important role of physiotherapy in the successful management of COVID-19 as well as the competence and skills of physiotherapists.

'to my knowledge, I was the only physiotherapist in the frontline in the country as at that time. …they saw the consequences of my action…they are now more well informed than they used to be...when the coordinator of the isolation centre is talking…he usually makes reference to…physio, there was no time he's giving a progress report that he doesn't make reference to physiotherapy' (P2).

The efforts yielded some positive outcomes with reports of increasing people within the health system having information about the role of physiotherapy in COVID-19 management.

'…the national vice president had written to the NCDC, WHO…because I remember there was a circular from the ministry of health requesting for the training of health professionals, and they requested for physiotherapists…In this way, I think they are getting to know. The national body has also submitted our own guidelines...' (P1).

Half of the frontline physiotherapists appeared unfazed by their initial lack of recognition by other members of the COVID-19 teams, and believed that other health professionals, particularly medical doctors and nurses, would acknowledge the importance of physiotherapy when they observed the positive clinical effects of their actions on patients with COVID-19. These physiotherapists expressed confidence in the uniqueness of their knowledge and clinical expertise.

'…I just usually do not feel bad because I know what I know and I know nobody that is not a physiotherapist knows what I know and cannot do what I do. It was going to be a matter of them appraising their actions before me coming… I acted, I acted, and they saw the result of my actions. They saw the result of my actions, it gave me that feeling of satisfaction, that feeling of "yes, I'm the boss", this field I know it better… I was going to represent not just myself but the profession. I was going in to make a statement, but for me how best to make a statement than your action and the result of your action? I never felt threatened' (P2).

The breaking point: finally exiting the team

All the interviewed physiotherapists were disappointed that despite their increased advocacy about physiotherapy, and perceived competence in discharging their clinical duties, their recognition and respect within COVID-19 teams in Nigeria remained very poor. They believed that this was associated with the teams being clinically and administratively led by medical doctors.

'…We made our clinical presentation about patient management and how we are supposed to be an integral part of the team. We made some recommendations. Then, we met the head of the infectious unit team outside, he told us point-blank that there is no provision for us…' (P7).

'…So many things happened…that suggest we were not recognised. They [doctors] did not see us as important. Why? Because it was the doctors that were coordinating everything. When they were demanding for the names of those that should be paid, they requested forty names from the hospital. The coordinator who is a consultant [physician] decided to put the names of all the doctors and left out other health workers including physiotherapists, not even one of them…' (P8).

This led to three of the interviewed physiotherapists not wanting to remain part of the COVID-19 team after the first COVID-19 wave in Nigeria. They refused to re-join the teams when the second wave started in Nigeria.

'…I was so discouraged that I did not want to be part of the team again. So, when the second wave started…I said I was not going back…'(P7).

2. Problems with multidisciplinary teamwork

All the interviewed physiotherapists expected a multidisciplinary approach to COVID-19 treatment in Nigeria which recognised the role of each professional group, providing equal opportunities for health professionals to bring on their expertise.

'…a multidisciplinary team in which everyone will work together as one without anyone thinking others are inferior…' (P6).

However, the frontline physiotherapists felt that this was deliberately not observed by the medical COVID-19 team leads in the government hospitals.

'…they see a condition that should be referred to "A" they hold it because they have grudges with "A". When they see a condition that should be referred to "C" they don't refer it because they want to take all the glory...whereas nobody is an island, so why not do your part and refer to the next person…(P3).

Lack of teamwork in the ICU and COVID wards of government hospitals

Multidisciplinary teamwork was reported as suboptimal in the government owned COVID-19 treatment and isolation centres and the government hospitals. All the interviewed frontline

physiotherapists viewed the nurses as complementary and supportive of physiotherapy roles, although this appeared to be sometimes hampered by poor infrastructure such as irregular electricity supply that impacted on the use of suctioning machines.

'…Times when I needed to turn the patient and the patient was bigger than me, if I don't get the porter, I could get the ICU nurse to help me out…' (P5).

'…most of the time suctioning is done by nurses in the wards…we may need the patient to be suctioned during treatment. They do that for us. The only problem will be if there is no light and there is no manual suctioning machine…(P1).

In contrast, the physiotherapists reported that most of the frontline doctors viewed other health professionals including physiotherapists as inferior, disregarding them as team members.

'…so the nurse was like…what you did today, I was in awe... The doctor that was on duty was like "don't do that, don't do that, he will asphyxiate…' (P3).

Consequently, they believed that this led to doctors taking over the role of some multidisciplinary team members in the government hospitals.

'…it is the house officers [medical interns] that do the nurse's job…' (P8).

'…the nurses doubled as record officers. I did not actually see them work in the ward…(P7).

In contrast, multidisciplinary teamwork was perceived as adequate by frontline physiotherapists in the private COVID-19 treatment and isolation centres.

'…we had a very strong teamwork and team spirit, so it was really easy...' (P5).

Discrimination of physiotherapists within COVID-19 teams

The six physiotherapists working in the government-owned COVID-19 health facilities felt that they were treated and regarded less favourably than other health professionals in the COVID-19 teams by the medical team leads.

They perceived that this manifested as lack of remuneration, protective equipment, and accommodation.

'…the doctors are paid, and the physiotherapists are not being paid…' (P6).

'…Doctors are provided accommodation, we are not…'(P7).

Three frontline physiotherapists reported not being informed, tested for COVID-19, or supported in any way when they were exposed to the virus in contrast to their medical colleagues. They believed that their discriminatory experiences were due to interprofessional rivalry.

'…interprofessional rivalry in our clime here…there is nothing the medical doctor will do without having a nurse ... They look at others as competing with them…' (P1).

Three frontline physiotherapists working primarily in the ICU and COVID wards of government hospitals and one frontline physiotherapist working in a private COVID isolation/treatment centre reported attempts to either completely remove physiotherapists from the COVID-19 teams by the government COVID-19 taskforce led by medical doctors, or to side-line physiotherapists by assigning their roles to other health professionals by the hospital medical team leads. Three physiotherapists reported feeling 'alone' and being the lone physiotherapist within their teams in contrast to other professionals. They described relying on their knowledge of medical presentations and clinical expertise to feel comfortable relating with the other health professionals.

'…I felt like a loner because I was the only physiotherapist. Nobody could really relate with me. I couldn't relate with most people. But because of the vast knowledge of my training, in my pre-clinicals we did everything that medical doctors would do…did. So, I could relate with the medical presentations better…' (P3).

Over half of the physiotherapists reported no longer seeking validation from the medical teams after learning to be contented with patients' appreciation of their positive clinical impact.

'…so I wasn't really seeking...the validation from them [medical team leads]…' (P4).

'…I am not here to impress anybody but to make my patient better...' (P6).

Better acceptance of physiotherapists in private non-governmental or state-owned non-hospital centres

In contrast to the experience of frontline physiotherapists engaged in government hospitals, the two physiotherapists in the private COVID centres felt accepted and recognised by the other team members. This was particularly by the medical team leads, after they had understood physiotherapy roles in COVID-19 management. The physiotherapists greatly appreciated this, and this seemed to encourage and motivate them.

'…the medical colleagues … they are a wonderful set of people… they were just treating me like a King... that acceptance from them…gave me the psychological balance to focus on what I wanted to do...' (P3).

They regarded their acceptance by the medical team leads as more important than the provision of physiotherapy equipment which was often lacking. These two physiotherapists also reported no

discrimination in terms of remuneration, provision of accommodation and other services provided to other members of the COVID-19 team.

'…we were paid well…and they foot all the bills' (P3).

'…they provided accommodation to us and the other team members…' (P5).

3. Broad ranging impact on physiotherapists' personal and professional lives

Stigmatisation that is wide ranging

All the physiotherapists reported being stigmatised by either physiotherapy colleagues who were not involved in the frontline management of patients with COVID-19, other health professional colleagues, extended family members, friends, acquaintances, or the general public for fear of contracting the virus from them.

'Some people find it offensive when I try to say hi to them from a distance because I am involved with treating patients with COVID-19 …(P7).

'I had been hearing about stigma... I didn't really know the impact in the lives of people until I was a front liner you know (sighs). I didn't tell anybody at home, I only told 2 of my siblings, and one of them is a step sibling and he went ahead to mention it errr...in a very demeaning way that err...I should not be allowed to do certain things that I actually wanted to do errrr... I can't go into the details of that because they are my personal life...the stigmatization really got to me for some days and I was like, is it a crime to actually be a health professional that is working to actually salvage his generation…? I think they just took advantage of the information I actually put at his door step and used it against me so I got to know that yes stigma could be a very difficult thing for patients with COVID-19 themselves to deal with, so that made me actually know that if somebody is actually positive if he doesn't want to

communicate about it I can really relate with him because it is quite difficult what people can do with stigmatisation…' (P3).

Two of the physiotherapists who were stigmatised by extended family members, found succour with some of their physiotherapy colleagues and friends.

'…my colleague spoke with me; my friends just encouraged me...she really helped me… I should not put my mind there... I'm doing something very honourable and venerable so I should not allow anybody to get to my head…' (P3).

Friends were the source of stigmatisation for two of the physiotherapists.

'I mentioned it to my friend, since then my friend ran away from me because I was working in the isolation centre…' (P8).

All the physiotherapists were stigmatised by the public.

'…But another challenge we had to deal with was the thought of coming out of the centre, because the centre was located on the island. Even after you finished the work for the day and you clean up... once you step out of the centre, people see that you are coming out of the centre…everybody wants to avoid you...' (P5).

Stigmatisation was reported as the greatest challenge by one of the physiotherapists, and she desired external support. For another physiotherapist, stigmatisation by the general public was through social media (Twitter and Facebook). He had gone public about his infection with the virus in a bid to make Nigerians understand the reality of COVID-19 and reduce the conspiracy theories regarding COVID-19 in Nigeria. He was rather treated with suspicion by the Nigerian public who thought that he was being

used by the government. The physiotherapist was consequently concerned about the possible impact of this on his family members.

'…people said that the government paid me money…Then I worried about my parents…my siblings...' (P4).

He therefore avoided informing his family about his involvement and had to rely on the acceptance and support from professional colleagues and religious associates. Consequently, most of the frontline physiotherapists avoided informing family members and friends about their involvement in the frontline. Three of the physiotherapists reported relying on their immediate nuclear family as their only source of support. Physiotherapy colleagues were the source of stigmatisation for two of the frontline physiotherapists, which they found difficult, as they were also dealing with discrimination within COVID-19 multidisciplinary teams.

'…they did not provide us accommodation like the doctors and others…so when we get to the department, we were being treated like foreigners, because everybody started avoiding us…' (P7).

Fear, anger and having 'off days'

All the physiotherapists gained confidence with a clearer understanding of their roles in COVID-19 management. Their initial fear about the uncertainty surrounding COVID-19 was no longer present.

'… Now, the fear, has been replaced with a sense of purpose…' (P7).

All the interviewed frontline physiotherapists were afraid of getting infected with COVID-19 or dying from it in the frontline.

'…I mean I got COVID so… I was a bit scared…like…what's going to happen, am I gonna die? (P4).

One of the physiotherapists was not afraid of death as he assessed his risk as very low, although he also sought spiritual sustenance.

'…I prayed about it and then, I allowed God to take control…' (P6).

Two of the physiotherapists had their fear reinforced through communication with or infection of other COVID-19 team members. They attempted to reduce this fear by taking steps to minimise the severity of a potential disease or by convincing themselves that the benefits of their involvement were worth the risk. For two of the physiotherapists, the fear of getting infected was paralysing, and they described having 'off days' in relation to this, when they felt like being alone, and not being involved in activities they usually enjoyed.

'…I was feeling scared, …really really scary, and I was really really down…' (P2).

They described critically analysing their risk of exposure and infection during such 'off days'. Recovery from this debilitating fear was facilitated by convincing themselves that they were unlikely to have been exposed and infected or feeling that they were unlikely to experience a severe disease even when infected or remembering their patients with COVID-19 who were relying on them for survival.

'…those that died … are those having comorbidities, … I didn't think I fit into that category…' (P2).

'…the thought of the patients looking up to me made me want to get up…' (P3).

One of the physiotherapists reported becoming angry at getting infected with the virus whilst working in the frontline. He blamed himself and regretted exposing himself and his family members to the virus in a health system that did not even acknowledge or appreciate his role as a physiotherapist.

> *'I was angry because I got it because I volunteered. In the western world, when volunteers go to an active environment, they are well protected. Coming into an environment where you are not even acknowledged…' (P7).*

All the physiotherapists felt that exposure to the virus and infection of some of their colleagues was due to inadequate provision of personal protective equipment (PPE), and lack of support from both the health system and the government.

The fear of infecting beloved family members had severe impact on physiotherapists' personal lives and mental health. Family interaction and relationship became adversely affected as they stopped or minimised contact with their close family members in an attempt to protect them.

> *'…I would just get home and lock myself in the room… because of the fear…' (P5).*

> *'…my wife, …was pregnant, so we had to keep distance…' (P8).*

All the frontline physiotherapists were also dreading the possibility of losing their patients to complications of COVID-19.

> *'…Scary in terms of those in the ICU, on oxygen, with an SPO2 of below 80, nobody wants a patient to die in his hands…' (P2).*

> *'…as I am treating the patient, I will be like arrrh, this patient might not do well…(P6).*

Feelings of severe loss

All the frontline physiotherapists expressed feelings of severe loss in terms of prolonged use of uncomfortable and restrictive clothing; little or no physical contact or support from family and friends; diminished social circle from reduced religious and other social activities; reduced physical activity; adverse economic outcomes from loss of income from private practice; increased transportation costs; and their patients dying of COVID-19 complications.

'…having to wear a facemask every day, …the back of my ears… are beginning to hurt (P4).

'…We have to protect ourselves with all these uncomfortable stuffs…' (P8).

'…limited my movement… Visiting friends has drastically reduced… churches were even locked up…' (P1).

'I had to avoid everybody, I had to avoid my wife, I had to avoid my kids, I had to be locked up…' (P7).

'…we were accommodated …so I had to change my environment totally, I changed my friends, I changed everything...' (P3).

'…affected my work… I'm a private practitioner and patients were not coming (P3).

'…but when the pandemic came …the cash flow was going down. There was financial strain… The financial impact affected me personally' (P7).

'…before, I could easily use a public transport…now I have to use Uber so it's even more costly…' (P5).

4. <u>Lack of support for perceived physiotherapy roles from prevention through to rehabilitation</u>

All the frontline physiotherapists believed they were supposed to be involved in preventive efforts, therapeutic strategies, and long/short-term rehabilitation. Preventive efforts entailed primary

prevention of infection and secondary prevention of severe disease. The frontline physiotherapists emphasized increasing physical fitness and reducing deconditioning from COVID-19 lockdowns.

All but one of the frontline physiotherapists were not cardiopulmonary physiotherapists and they reported also fulfilling these roles.

'*We all had to adapt as respiratory physiotherapists…' (P7).*

This could be because many cardiopulmonary physiotherapists were not recommended to the frontline by their departments.

'…the department [physiotherapy] started choosing those who will go first … I realised that I wasn't among those who were going…' (P6).

Physiotherapists' roles in COVID-19 management are not fully harnessed in Nigeria

All the interviewed physiotherapists reported not being optimally involved in the therapeutic stages of COVID-19 management. They also did not view themselves as adequately involved in preventive efforts and in the rehabilitation and long-term management of the complications from the disease.

'they have…post infection symptoms, a lot of them require physiotherapy…but we don't see them' (P1).

'On your own': lack of material and psychological support

All but two frontline physiotherapists felt unsupported by the health system and the government. They interpreted the lack of provision of PPE, lack of sanitation facilities, lack of remuneration and

allowances, and lack of health and life insurance in the case of infection, severe disease, and death, as very discouraging.

'…… we don't feel confident that if you get infected that you are not on your own…' (P1).

'…we don't have equipment, we don't have good funding, remuneration is zero…' (P2).

'*The PPEs were not the best quality, … I had no help; I had no support…I was not even paid…' (P7).*

Physiotherapists' reliance on self-support and support of one another

All six frontline physiotherapists in the government facilities reported learning to manage their expectations and depend only on themselves and fellow frontline physiotherapists. More senior physiotherapists were supporting and guiding the younger ones.

'…and you call them [junior physiotherapists] before they start their work. …how was your night? Ask about their health. … And then try to explain to them what happened the previous day. If they have some cases that they think they [junior physiotherapists] need special information about, we [senior physiotherapists] try to do that for them…' (P1).

Discussion

Statement of principal findings

The study explored the experiences of physiotherapists managing patients with COVID-19 in the frontline in Nigeria. Results highlighted the physiotherapists' desire to be included in the COVID-19 teams in Nigeria seemed to be predominantly driven by their personal agencies, sense of professionalism, previous experience managing highly infectious diseases, or being a cardiopulmonary

physiotherapist. The frontline physiotherapists, particularly those in the government hospitals in Nigeria, felt that the road to becoming members of the COVID-19 team was arduous and came about through their own sustained advocacy. Even so, some of them exited the team, and were no longer involved in the frontline out of frustration. This was because they could no longer cope with the perceived psychological, emotional, and financial impact of feeling discriminated against.

Interpretation within the context of the wider literature

In contrast to the findings of this current study, the availability or lack thereof of PPE and COVID-19 allowances were reported as a general problem affecting health workers in other studies in Nigeria [26,27], and China [7,8] which did not include physiotherapists. Inadequate provision of PPE appeared to be affecting all health care professionals equally in studies that included physiotherapists in the UK and Spain [10,11]. Similarly, the lack of PPE was reported as a global problem affecting all world regions, especially lower income countries, and this contributed to the high burden of infections and deaths among healthcare workers[28].

Discriminatory experiences reported by the frontline physiotherapists in relation to managing patients with COVID-19 as frontline healthcare workers is a novel finding in this study and has not been reported by other studies of patients with COVID-19. This finding aligns with a general lack of recognition of the role, scope and autonomy of physiotherapy by individuals, healthcare professionals especially physicians, government and the society globally, although this might be worse in low income settings[29–33]. The frontline physiotherapists felt that they were not regarded as legitimate frontline members of the COVID-19 teams in Nigeria. The frontline physiotherapists in government hospitals expressed discrimination in relation to lack of remuneration, inadequate provision of PPE and accommodation plus little or no professional recognition by medical team leads. In contrast, the frontline physiotherapists in the private COVID isolation and treatment centres in Nigeria reported being recognised, respected, and supported by their medical team leads and other healthcare professionals in their teams. There were no reports of any form of discrimination from qualitative

studies of physiotherapists who were practising in the United Kingdom and Spain[10,11]. Discrimination of physiotherapists as frontline healthcare workers in the COVID-19 pandemic in Nigeria may be associated with the interprofessional rivalry rampant in the Nigerian health sector [34–38]. The perceived or actual discrimination of other healthcare professionals by some medical team leads in Nigeria might hamper professional autonomy, professional identity, professional expertise and interprofessional harmony. Another reason for the discrimination of physiotherapists as frontline healthcare workers, particularly in the hospitals, could be because the COVID-19 teams in these facilities were led by infectious disease medical experts. These specialists may have had little or no clinical interaction with physiotherapists in the hospitals prior to the COVID-19 pandemic probably due to their limited involvement in acute care settings in Nigeria. It is therefore not surprising that the frontline physiotherapists felt that their roles in health promotion, disease prevention, treatment, and rehabilitation in relation to the pandemic were not adequately recognised and utilised. This might have adverse implications for patients with COVID-19 in Nigeria.

The lack of multidisciplinary teamwork and the perceived discrimination of physiotherapists in the frontline by the team leads might undermine an effective response to the COVID-19 pandemic in Nigeria. Teamwork is required for optimal quality and safety of patients, the well-being of healthcare professionals, and good financial outcomes for healthcare systems[39]. Experts have reported that scarce resources during pandemics can trigger biases against other professionals, with team leads likely to protect only their own group[39]. This can stifle communication between team members, and the coordination of equipment and other materials across professions and organisations that are critical in implementing an effective response to the COVID-19 pandemic[39]. Frontline physiotherapists in Nigeria felt discriminated against in relation to recognition of their expertise, and the quantity and quality of PPE made available to them compared with other COVID-19 team members. Scarcity of resources and physiotherapy services not being accessible to all people in the society were identified as the most frequently experienced ethical issues by physiotherapists both in the African region of the World Physiotherapy as well as globally[40]. Teamwork characterised by effective coordination of

expertise and resources across health professional groups can ameliorate these problems. Communication between professional groups is also important. Communication should be accurate, timely, cordial and reflective to enhance equitable distribution of resources and the quality of care[39]. The Nigerian health system need to encourage clinical team leads that acknowledge the diversity of multidisciplinary team members required in effectively and efficiently managing the pandemic. Although hierarchy is a key feature of healthcare systems and fosters coordination, it can also hamper inclusiveness[39]. Inclusive behaviour from team leads can ensure that members from other professional fields can feel psychologically safe to participate and collaborate with multidisciplinary team members. Medical doctors lead the COVID-19 teams in Nigeria. In high income countries, physiotherapists and other healthcare professionals have also successfully led COVID-19 teams. The Nigerian healthcare system needs to adopt a multidisciplinary team orientation with leadership that ensures the individual well-being of all health professionals within COVID-19 teams. This can be a great asset in the current and future infectious disease pandemics in Nigeria.

It was surprising that only one of the interviewed frontline physiotherapists was a cardiopulmonary physiotherapist. Comparison with previous studies is impossible because they did not specify the physiotherapists' specialty areas [10,11]. The only cardiopulmonary physiotherapist in this study reported not being initially put forward to join the COVID-19 team. He reported making personal efforts that made him to be included later. Similarly, one of the cardiopulmonary physiotherapists in the Public Involvement and Engagement consultation group also reported not being invited to join the COVID-19 multidisciplinary team as a frontline physiotherapist. He reported that despite being the only cardiopulmonary physiotherapist in his hospital, his physiotherapy department recommended physiotherapists from other specialty areas to join the COVID-19 team. The reason for this finding is unclear. However, the results of this study suggest that previous experience managing highly infectious diseases may have been the major factor influencing the recommendation from physiotherapy departments. This might explain why the highest number of the frontline physiotherapists were neurological physiotherapists. In contrast, the private COVID-19 centres were

reported to have advertised for any available physiotherapists which may have led to none of their recruited frontline physiotherapists being cardiopulmonary physiotherapists. This finding could be related to the few cardiopulmonary physiotherapists currently working in Nigeria [41]. The involvement of mostly non-cardiopulmonary physiotherapists in the management of patients with COVID-19 in the frontline in Nigeria might have meant that the frontline physiotherapists did not demonstrate the level of cardiopulmonary expertise that would have been the case for cardiopulmonary physiotherapists. This might partly explain why the medical team leads underestimated the potential role of the frontline physiotherapists in COVID-19 management in Nigeria. However, the frontline physiotherapists reported experiencing discrimination prior to being given any opportunity to demonstrate their expertise. The reported interprofessional rivalry between medical doctors and other healthcare professionals in Nigeria [34–36] may therefore be more important than the level of expertise of frontline physiotherapists in explaining the feelings of discrimination reported by the frontline physiotherapists.

Reports of stigmatisation, fear, anger, feelings of severe loss, and lack of material and psychological support were common findings in other studies[6–9]. Physiotherapists in this study had experiences of stigmatisation from physiotherapy colleagues who were not engaged in the frontline, other health professional colleagues, family members, friends, acquaintances, or the public. In contrast, physiotherapists in other countries did not report stigmatisation from their neighbours, acquaintances and the general public as physiotherapists were usually not perceived as being in regular contact with potentially infectious patients in their routine duties in those countries [10,11]. In Nigeria, the public often do not understand the difference between physiotherapists and medical doctors which might at least partly explain the stigmatisation of frontline physiotherapists by the public. There were no reports of stigmatisation from physiotherapy colleagues, other health professional colleagues, family members and friends in these studies [10,11]. In contrast, physicians and nurses managing patients with COVID-19 were stigmatised by the general public in Iran [42].

The fear experienced by frontline physiotherapists in Nigeria were in relation to the novelty of the virus, fear of infection, having severe disease, dying from the disease, or transmitting it to their loved ones. This aligns with findings from physiotherapists in other countries including the United Kingdom [10] and Spain [11], and experiences of other health professionals including physicians and nurses in China [7,8], and Iran [42]. The frontline physiotherapists in Nigeria felt anger in response to getting infected whilst performing a duty for which they perceived they were not acknowledged by the medical team leads and the health system. Anger was experienced by frontline health workers in relation to the perception of abandonment by the government and breaking of lockdown guidelines in the United Kingdom [10]. Frontline physiotherapists in Spain felt anger at the roller coaster of other emotions they were feeling including fear, sadness, illusion, rage, uncertainty, panic, worry, grief, loneliness, and anxiety [11]. Feelings of severe loss expressed in terms of restrictive uncomfortable clothing, loss of physical contact with family and loved ones, loss of spiritual activities, reduced physical activity and loss of income from private practice due to the lockdown align with findings from other studies [6–8,10,11,42]. The complaints about the lack of provision of equipment, lack of emotional and psychological support in the government hospitals, and feelings of abandonment reported by the frontline physiotherapists in Nigeria have been felt elsewhere [10].

Strengths and limitations

One of the strengths of this study is its novelty. This is the first study of physiotherapists managing patients with COVID-19 in the frontline in Nigeria. It is one of the very few studies globally that have explored the experiences of physiotherapists as COVID-19 frontline healthcare workers. Another strength of this study is that it was mainly conducted by local researchers with roots in the healthcare system. Furthermore, this study was made robust by the active participation of a Public Involvement and Engagement consultation group in the interpretation of results. Despite the strengths of this study, it had limitations. Data saturation could not be established due to the limited number of physiotherapists engaged in the frontline management of COVID-19 in Nigeria. Only eight of these physiotherapists consented to participate from the pool of about 20 physiotherapists engaged in

managing patients with COVID-19 in the frontline in Nigeria at the time of this study. 20 physiotherapists engaged as frontline COVID-19 health workers in a country of over 200 million people may highlight an underutilisation of physiotherapists in Nigeria. Considering the very few numbers of physiotherapists in Nigeria overall (as detailed in the methods section), and in the frontline, the number of participants in this study appears realistic and reflects the Nigerian 'reality'. Another potential limitation is that telephone interviews can prevent the recognition of non-verbal signals which might have influenced the interpretation of findings. However, available evidence suggests that there is no obvious difference between telephone and face to face interviews[21]. Telephone interviews have the added advantage that they allow safe data collection during a highly infectious disease pandemic and also afford some participants a greater freedom to discuss potentially difficult topics without having a sense of loss of confidentiality[21].

Implications for policy, practice, and research

Increased advocacy for the involvement of physiotherapy (particularly cardiopulmonary physiotherapy) is required in Nigeria. Public awareness regarding physiotherapy needs to be intensified with physiotherapy associations in Nigeria having a significant role to play. This advocacy can be through mass media campaigns and community outreaches to educate the public, other healthcare professionals, and the Nigerian government about the areas and scope of physiotherapy. It is particularly important to provide enlightenment regarding the roles of cardiopulmonary physiotherapy and other fields of physiotherapy in the management of patients with COVID-19. As some medical specialists appeared to have had little or no clinical interaction with physiotherapists in the hospitals prior to the COVID-19 pandemic, interprofessional education needs to be instituted at Nigerian medical schools at the undergraduate and postgraduate levels. This can foster interprofessional respect and collaborative practice for patient-centred care. Frontline physiotherapists involved in managing patients with COVID-19 in Nigeria need to be better supported materially and psychologically by medical administrators, medical team leads, and the Nigerian

government. However, physiotherapists in Nigeria may need to increase their capacity within the field of COVID-19 specifically, and within the area of cardiopulmonary practice generally. Healthcare policies in Nigeria need to promote the dignity of all health professions, rather than the superiority of one health profession to curb the pervasive interprofessional rivalry in the Nigerian health system. Nigeria needs a more inclusive healthcare system with team leads that respect and engage other frontline healthcare professionals for the effective management of the current pandemic and in preparation for future pandemics. Useful approaches for physiotherapy advocacy have been suggested. These include formation of physiotherapy task force for the quick improvement of the skills and knowledge of physiotherapists where necessary, active involvement of physiotherapists in the hospital triage, routine involvement of physiotherapists alongside medical and nursing staff in the management of patients with respiratory failure following viral infection[5]. Other approaches include multistakeholder engagement and support in strengthening rehabilitation. This can be through international organisations partnering with local organisations and initiatives, as well as with the country's government[29].

Conclusions

Physiotherapists managing patients with COVID-19 in the frontline in Nigeria felt that they were not regarded as legitimate members of the COVID-19 multidisciplinary teams by the medical team leads and the health system. Their experiences of discrimination were made worse by experiences of stigmatisation from extended family members, colleagues, and the public, coupled with perceived material and psychological losses due to the COVID-19 pandemic. There is a need to support and include physiotherapists as full members of interdisciplinary healthcare teams involved in the management of patients with COVID-19 in Nigeria to align with international standards of COVID-19 treatment.

Declarations

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Appendix 1: interview schedule

1. Demographic information

Age

Gender

Education

Specialisation

Years of practice

2. Could you tell me about becoming a physiotherapist?

3. What do you like most about being a physiotherapist?

4. Could you tell me what led to you becoming involved in caring for patients with COVID-19?

5. Could you tell me about the activities you undertake in working with patients with COVID-19?

   Probe for knowledge; skills; social/professional role and identity; beliefs about capabilities; beliefs about consequences; environmental factors.

6. What do you think about the way COVID-19 is being managed in your health facility?

   Prompts: What are the expectations on you managing COVID-19? What are the facilitators or barriers to your treatment of COVID-19?

7. How has it been for you since COVID-19 started in Nigeria?

   Prompts: What are the differences between work before the pandemic and during the pandemic? What are the changes and challenges in your work since COVID-19?

8. What is it like for you to care for COVID-19 patients?

Prompts: How does it make you feel? What were your feelings before the pandemic, during the first day of COVID-19 treatment and currently?

9. How have you coped with the changes and challenges in your work since COVID-19?

   Prompt: Has anything helped or made things more difficult? What is the available support and what support do you still need?

10. Can you tell me a bit about the relationship between your work and personal life?

    Prompts: What was it like before COVID-19? What is it like now?

11. Is there anything else you want to tell me that I haven't given you the chance to talk about? Probe for insights they may have had from this pandemic.

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1/1-3
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	1-2/6-35
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	2-3/37-68
Purpose or research question - Purpose of the study and specific objectives or questions	3/69-71
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	3-7/86-166
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	3-4/73-77
Context - Setting/site and salient contextual factors; rationale**	4/90-93
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	4-6/94-132
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	26/669-672
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	6/133-144

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	6, supplementary file 1/133-144, supplementary file 1
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	7/168-175
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	6-7/146-166
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	6-7/145-166
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	7/152-161

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-20/179-523
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	7-20/184-527

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	21-26/529-663
Limitations - Trustworthiness and limitations of findings	25/643-648

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	26/675
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	26/673-674

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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